The PHOTOFACT Servicer

SET 463 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ NOV., 1959

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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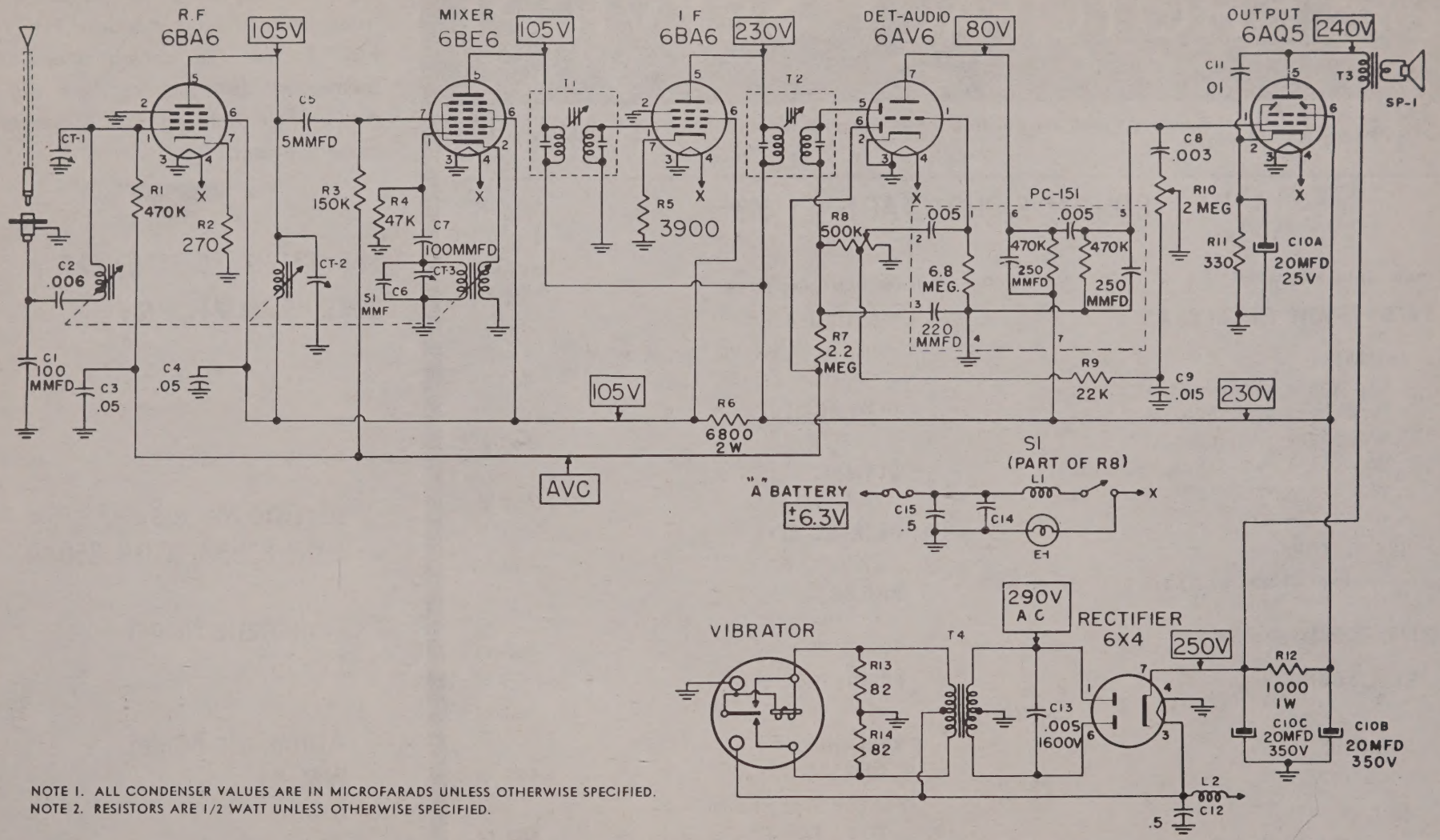
GDR-8503A, GDR-8504A

Automatic Model
FP-135

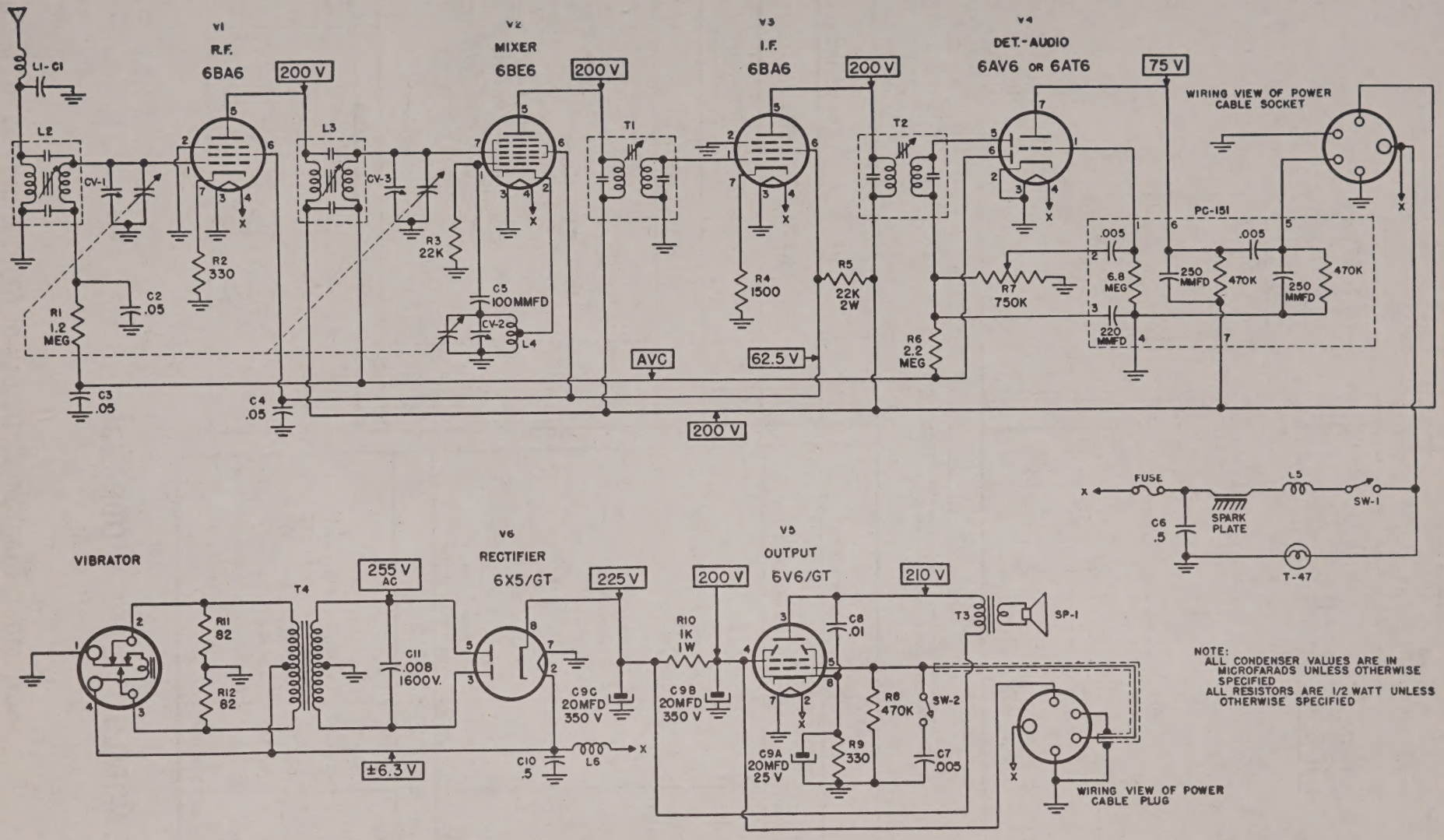
Automatic Model
WM-83



NOTE 1. ALL CONDENSER VALUES ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
NOTE 2. RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED.

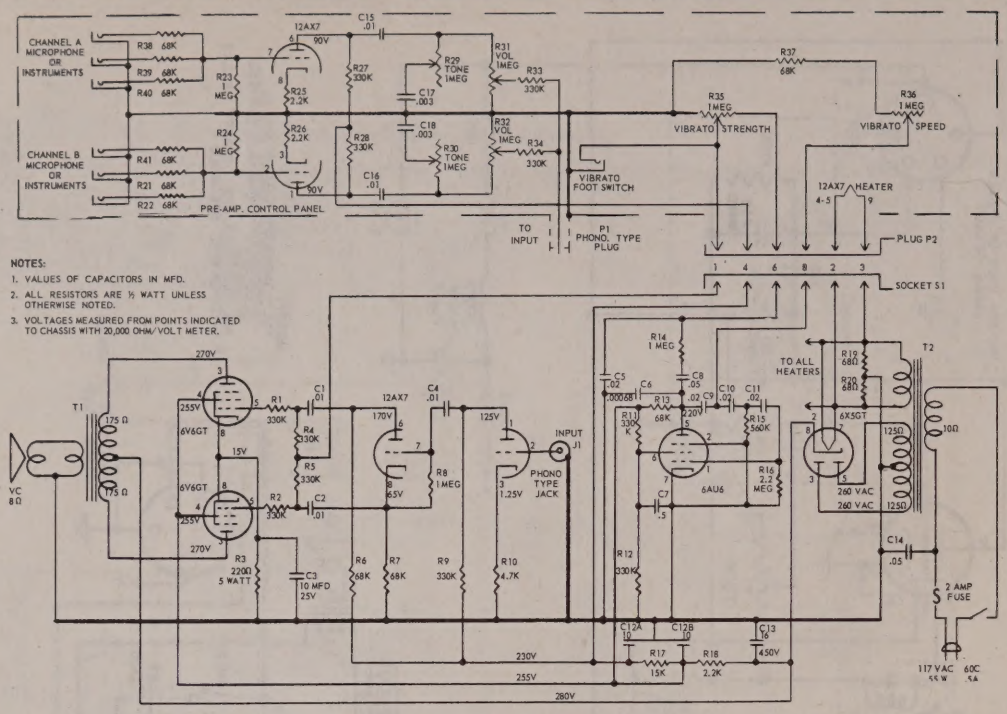
AUTOMATIC MODEL FP-135

Schematic Diagram Courtesy of Automatic Radio Mfg. Co.



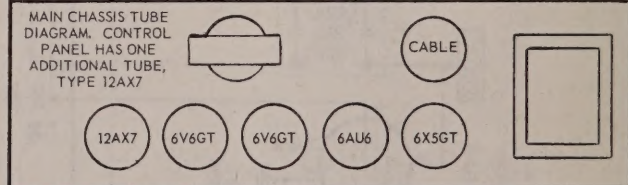
AUTOMATIC MODEL WM-83

Schematic Diagram Courtesy of Automatic Radio Mfg. Co.



REF. NO.	PART NO.	DESCRIPTION
RESISTORS (All Resistors ½ watt unless otherwise noted)		
R1,R2,R4,R5,R9,R11, R12,R27,R28,R33,R34		330K ohm, 20%
R3		220 ohm, 20%, 5 watts
R6,R7,R13,R21,R22, R37,R38,R39,R40,R41		68K ohm, 20%
R8,R14,R23,R24		1 megohm, 20%
R10		4.7K ohm, 10%
R15		560K ohm, 10%
R16		2.2 megohm, 20%
R17		15K ohm, 10%
R18,R25,R26		2.2K ohm, 20%
R19,R20		68 ohm, 20%
R29,R30	22-10513	1 megohm, Tone
R31,R32,R35,R36	22-10512	1 megohm, Volume
CONDENSERS		
C1,C2,C4,C15,C16		Tubular, .01 mfd., 600 V.
C3	25-1025	Electrolytic, 10 mfd., 25 V.
C7	20-502	Tubular, .5 mfd., 200 V.
C8,C14		Tubular, .05 mfd., 600 V.
C5,C9,C10,C11		Tubular, .02 mfd., 600 V.
C12A-C12B	25-1010	Electrolytic, 10-10mfd., 450V.
C13	25-16	Electrolytic, 16 mfd., 450 V.
C17,C18		Tubular, .003 mfd., 600 V.
C6	20-680	Ceramic, .00068 mfd.

REF. NO.	PART NO.	DESCRIPTION
TRANSFORMERS		
T1	092	Output Transformer
T2	P92	Power Transformer
MISCELLANEOUS		
	8504C	Cabinet and Back
	182XM	Leather Handle, Brown
	2044	Handle Hardware, Brass
	168	Rubber Feet (4)
	68	Fuse Holder
	2019	"On–Off" Switch
	V15M	Speaker, 15 inch, 8Ω V.C.
P1	50-13	Plug, Phono. Type
J1	50-6	Jack, Phono. Type
P2	8-16	Plug, Octal
S1	8-19	Socket, Octal



AIRLINE MODELS GDR-8503A, GDR-8504A

Schematic Diagram Courtesy of Montgomery Ward & Co.

PHOTOFACT* Folder with CIRCUITRACE*

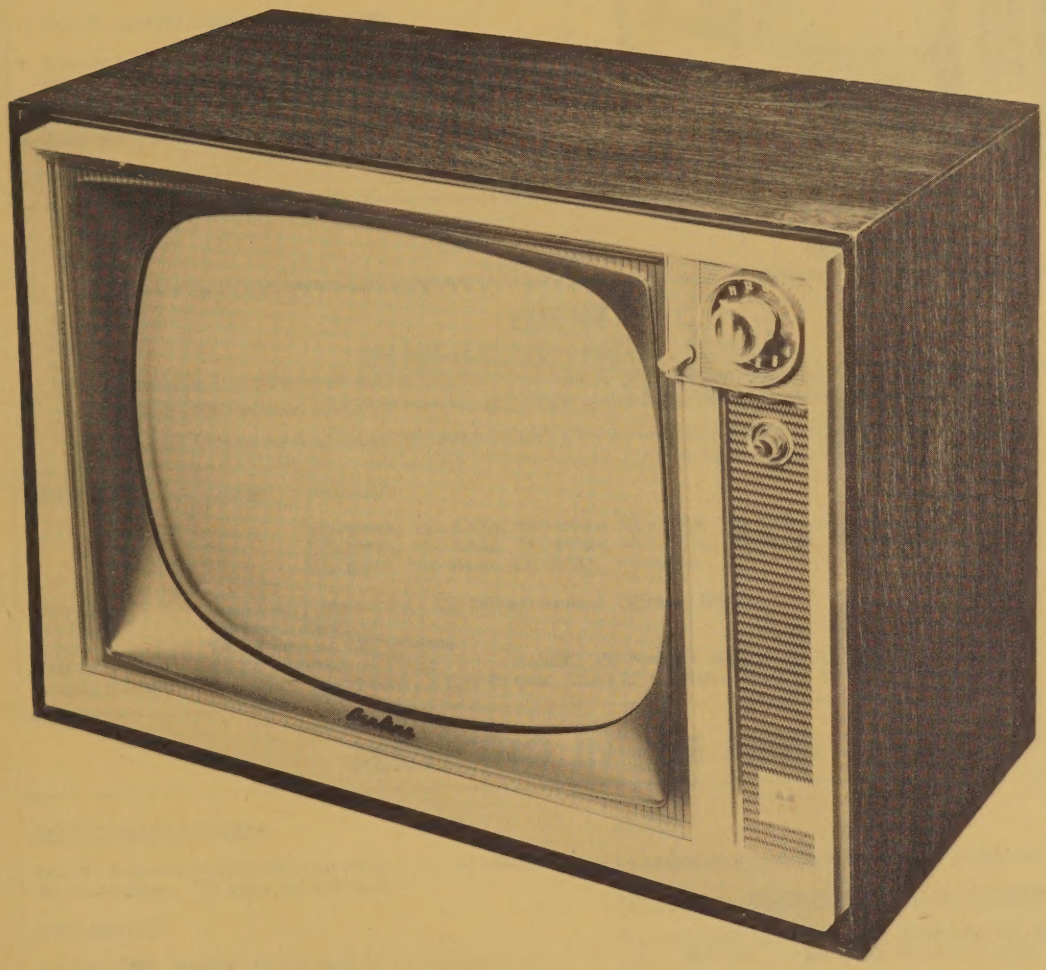
AIRLINE MODELS WG-4082A, 4092A, 4182A, 4192A, 5082A, 5086A, 5087A, 5088A, 5092A, 5097A, 5182A, 5186A, 5187A, 5188A, 5192A, 5197A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

AIRLINE MODELS WG-4082A, 4092A, 4182A, 4192A, 5082A, 5086A, 5087A, 5088A, 5092A, 5097A, 5182A, 5186A, 5187A, 5188A, 5192A, 5197A



MODEL WG-4082A

AIRLINE MODELS WG-4082A, 4092A, 4182A, 4192A, 5082A, 5086A, 5087A, 5088A, 5092A, 5097A, 5182A, 5186A, 5187A, 5188A, 5192A, 5197A

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER

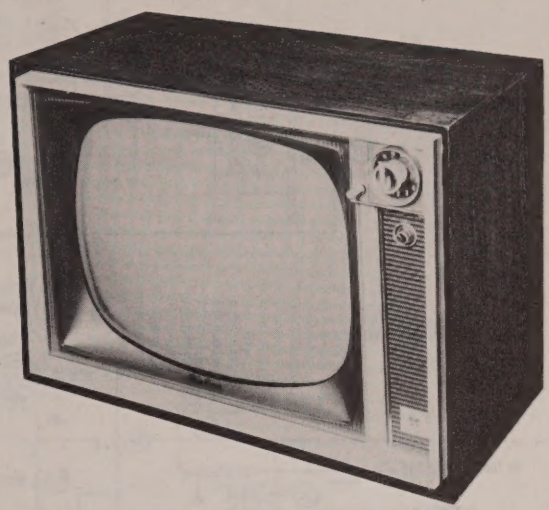
AIRLINE MODELS WG-4082A, 4092A, 4182A, 4192A, 5082A, 5086A, 5087A, 5088A, 5092A, 5097A, 5182A, 5186A, 5187A, 5188A, 5192A, 5197A

AIRLINE MODELS WG-4082A, 4092A, 4182A, 4192A, 5082A, 5086A, 5087A, 5088A, 5092A, 5097A, 5182A, 5186A, 5187A, 5188A, 5192A, 5197A

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 11 wood screws holding rear cover. Remove the rear cover.
2. Remove push-on type channel selector knob. Remove the channel selector escutcheon by pulling straight out. Remove remaining 6 push-on type knobs from the front.
3. Remove speaker leads and antenna leads.
4. Remove 1 wood screw holding tuner mounting bracket at top left rear of cabinet. Remove 4 wood screws holding picture tube mounting bracket at top of picture tube.
5. Remove 4 chassis bolts from bottom of cabinet.
6. Remove chassis.



MODEL WG-4082A

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	Airline	MODELS WG-4082A, WG-4092A, WG-4182A, WG-4192A, WG-5082A, WG-5086A, WG-5087A, WG-5088A, WG-5092A, WG-5097A, WG-5182A, WG-5186A, WG-5187A, WG-5188A, WG-5192A, WG-5197A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago, Illinois	
TYPE SET	Television Receiver	
TUBES	VHF-Fourteen, UHF-Fifteen	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 150 Watts, 1.45 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 2 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE DEVICE

A 7.5Ω fusible resistor (R61) is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, remove the Channel Selector knob.

AGC

The AGC may be varied by means of a Range control. (For location, see "Tube Placement Chart".)

FOCUS

No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive trimmer. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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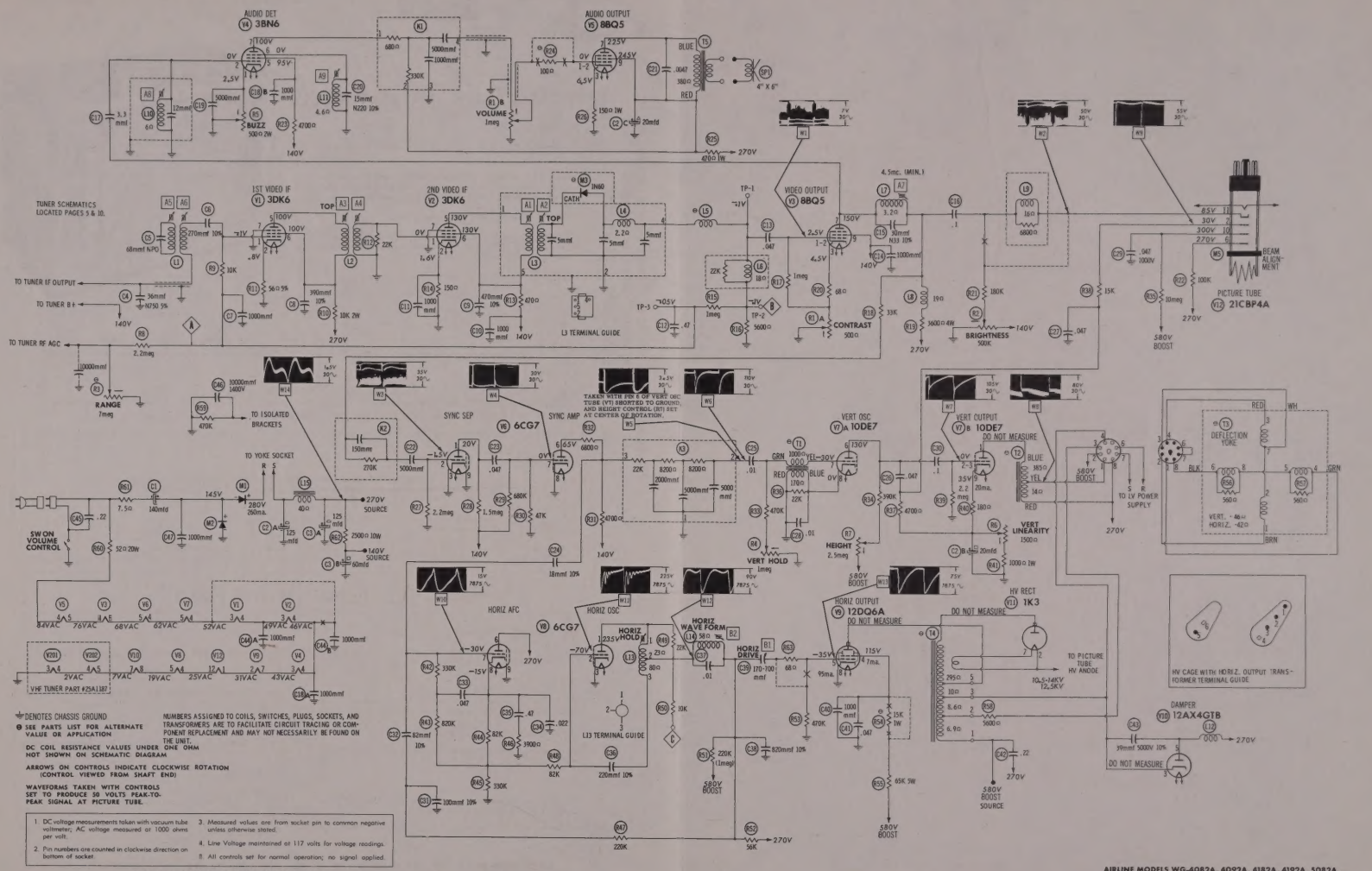
JA595

SET 463 FOLDER 1



DENOTES CHASSIS GROUND

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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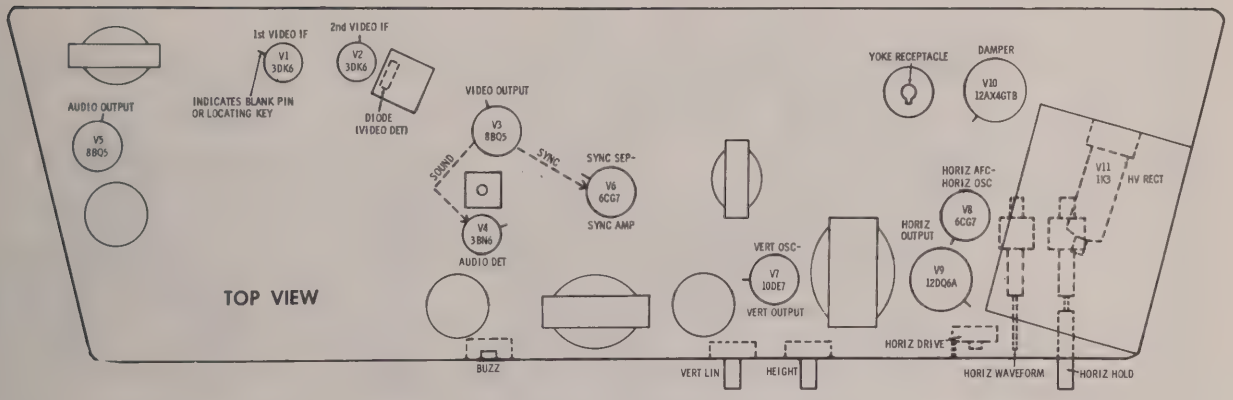
AIRLINE MODELS WG-4082A, 4092A, 4182A, 4192A, 5082A, 5086A, 5087A, 5088A, 5092A, 5097A, 5182A, 5186A, 5187A, 5188A, 5192A, 5197A

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

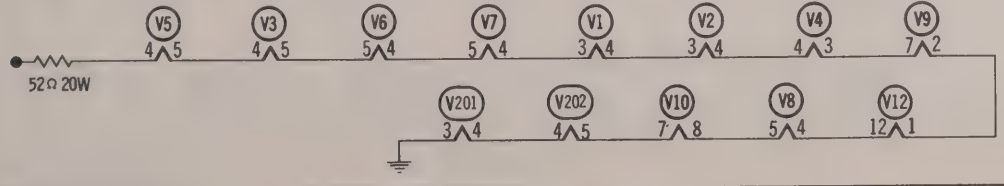
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor (LV Power), Rect. (LV Power)

SWEEP FAILURE
No raster, has sound V8, V9, V10, V11, V12
No vertical deflection V7
Poor vert. linearity or foldover V7
Poor horiz. linearity or foldover V8, V9, V10
Narrow picture Rect. (LV Power), V8, V9, V10
Vert. off freq. V7
Horiz. off freq. V8

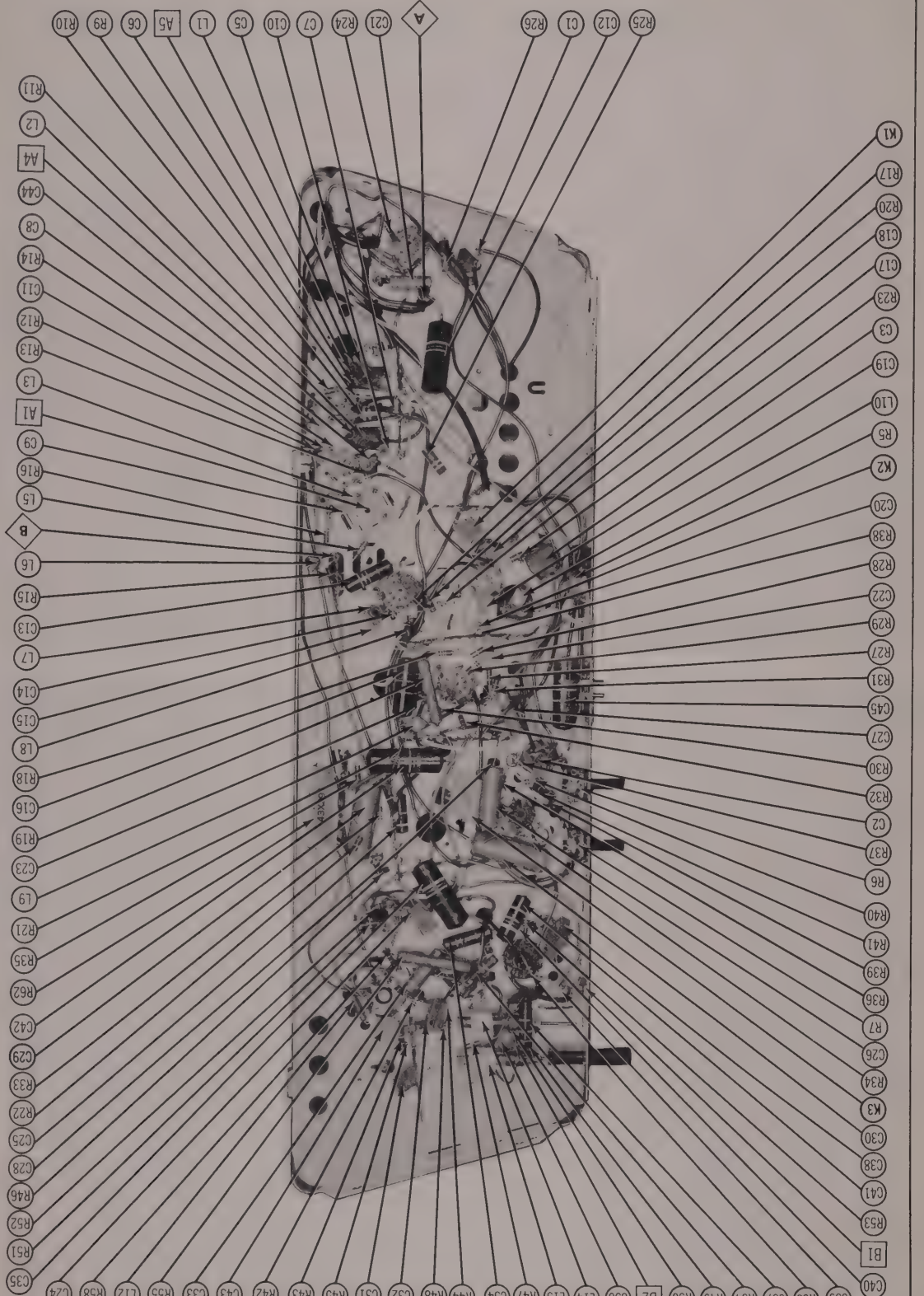
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V12
Has pic, no sound V4, V5

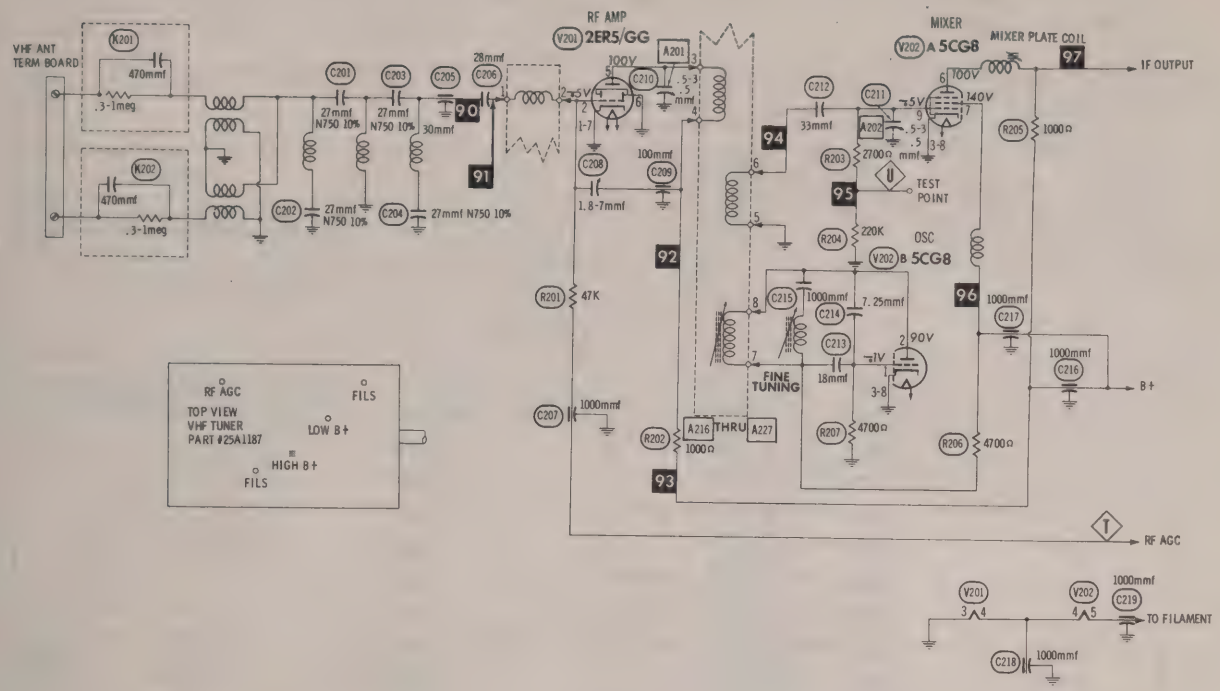
SYNC FAILURE
No vert. sync V7
No horiz. sync V8
No vert. or horiz. sync V6

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



CHASSIS BOTTOM VIEW





A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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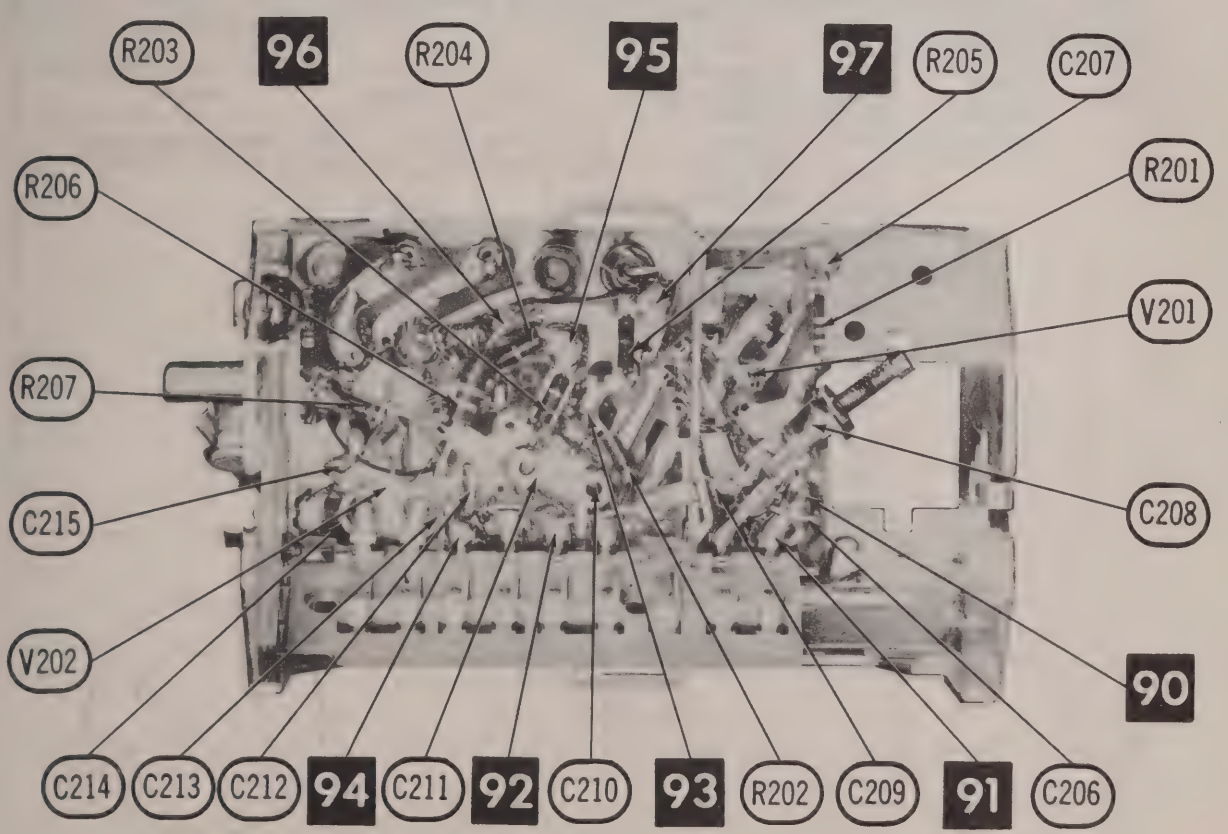
VHF TUNER 25A1187



A Howard W. Sams CIRCUITRACE Photo

TUNER BOTTOM VIEW

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

SET 463 FOLDER 1

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Allow a 20 minute warm-up period for the receiver and test equipment.

RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ. Positive to chassis.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately 1.5 volts).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A201, A202	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201.
2.	"	"	"	"	"	Vert. Amp. thru detector (Fig. 202). to plate of 1st. IF tube. Low side to chassis.	A203	Adjust A203 to obtain MINIMUM response on the scope.
3.	"	"	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately 1.5 volts).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A216	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

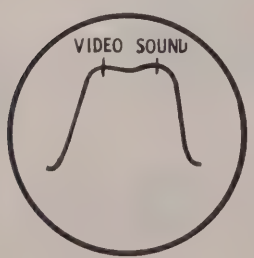


FIG.201

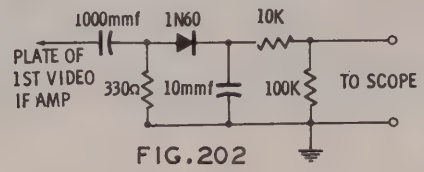


FIG.202

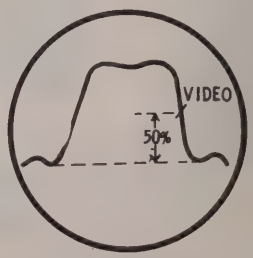


FIG 203

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 7 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of 2nd Video IF. Low side to chassis. Adjust output for 4VP-P on scope.	44.0MC (10MC Swp)	42.4MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 47K to point (B). Low side to chassis. (Across Video Det. load)	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. A1 controls marker position and A2 controls gain and symmetry.
2.	"	High side to pin 1 (grid) of 1st Video IF. Low side to chassis. Adjust for 4VP-P on scope.	"	42.4MC 43.5MC 44.5MC 45.75MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. A3 controls marker position and A4 controls gain and symmetry.
3.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	"	41.25MC 42.4MC 43.5MC 44.5MC 45.75MC	"	"	A5, A6, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Adjust A5 to place 41.25MC marker in trap notch.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.01mfd	High side to pin 2 (grid) of Video Output. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to pin 11 (cathode) of picture tube. Common to chassis. Use 0-10V AC scale.	A7	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength at the antenna terminals until a hiss is heard in the sound similar to super-regeneration.
Adjust A8, A9 and the Buzz control (R8) for maximum undistorted sound with MINIMUM buzz.
If the hiss disappears during adjusting, further reduce the signal strength.

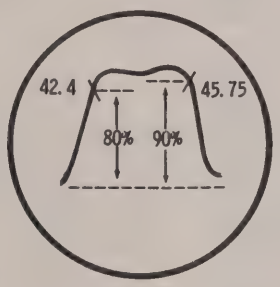


FIG.1

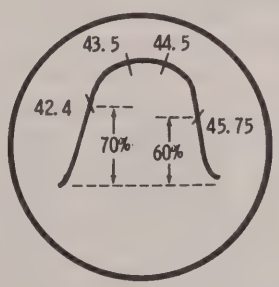


FIG.2

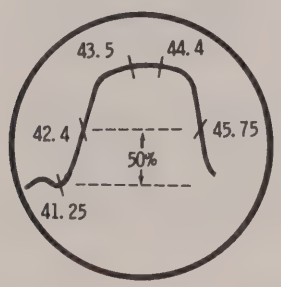


FIG.3

AIRLINE MODELS WG-4082A, 4092A, 4182A, 4192A, 5082A, 5086A, 5087A, 5088A, 5092A, 5097A, 5182A, 5186A, 5187A, 5188A, 5192A, 5197A

FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	CBS / GENERAL ELECTRIC / RAYTHEON / SYLVANIA — USE	TYPE
V1	1st Video IF Amp.	3DK8
V2	2nd Video IF Amp.	3DK8
V3	Video Output	8BQ6
V4	Audio Det	3BN6
V5	Audio Output	6BQ6
V6	Sync Sep -Sync Amp.	6CG7
V7	Vert. Osc. -Vert. Output	10DE7
V8	Horiz AFC-Horiz Osc	6CG7
V9	Horiz. Output	12DQ6A
V10	Damper	13AX4GTB
V11	HV Rect	1K3

PICTURE TUBE

ITEM No	REPLACEMENT DATA: AIRLINE PART No	GENERAL ELECTRIC PART No	RCA PART No	RAYTHEON PART No	SYLVANIA PART No	NOTES
V12	21CBP4A	21CBP4A ①	21CBP4A ①		21CBP4/ 21CBP4A ②	① Aluminized ② "River Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	FYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	140	150	AFH3-23	XA0361	FP1J7	TMS-34	TVL-1428		
C2A	4125	300	45X431	AFH41-02-60	XC0733.2	FP333.15	TMT-26	TVL-3574.3 *	
B	20	300							
C	30	50							
C3A	4125	300		AFH3-99-82	D0046	FP326.75	TMT-26	TVL-3574.6	
B	60	300							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	TOL	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	38		NT50 5%			TCN-36	C10G38U			
C5	68		NPO		NPO-DI 68	DTZ-68	C10G68C	CNO-468	10TCC-Q68	
C6	270		10%	80X26	DI-270	DD-271	L10T27	GP327	10TS-T27	
C7	1000			80X1	DI-1000	DD-103	BYA10D1	B-210	5HK-D10	
C8	390		10%	80X23	DI-390	DD-391	L10T39	GP339	10TS-T39	
C9	470		10%	80X19	DI-470	DD-471	5HS7+7	GP347	10TS-T47	
C10	1000			80X1	BPD-001	DD-103	BYA10D1	B-210	5HK-D10	
C11	1000			80X25	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	
C12	.47	300		RCP10M2474M	P388N-47		CUB2P47	GEM-2047	2TM-P47	
C13	.047	300		RCP10M4743M	P388N-047	DD-503	CUB3S47	GEM-4147	3TM-S47	
C14	1000			80X1	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	
C15	30		N33 10%	47X689						
C16	.1	400		RCP10M4104M	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C17	3.3			47X589	NPO-SL 3.3	TCZ-3R3	C10V33C	CNO-533	10TCC-V33	
C18A	1000			80X3	BPD-1X001	DD2-102	BYC5DD1	B1X210	5HK-D10	
B	1000									
C19	5000			47X507	BPD-005	DD-502	BYA10D5	B-250	5HK-D50	
C20	15		N220 10%	47X672					10TCR-Q25	
C21	.0047	600		RCP10M4752M	P688N-0047	DS-472	CUB6D47	GEM-6247	6TM-D47	
C22	5000			47X507	BPD-005	DD-502	BYA10D5	B-250	5HK-D50	
C23	.047	400		RCP10M4473M	P488N-047	DD-503	CUB4S47	GEM-4147	4TM-S47	
C24	18		10%	RCM20B180K	1469-0000L8	TCZ-18	32R5Q18	CNO-418	MS-418	
C25	.01	600		RCP10M403M	P488N-01	DS-103	CUB4S	GEM-411	4TM-S1	
C26	.047	500		RCP10M5473M	P688N-047	DD-503	CUB5S47	GEM-5147	5TM-S47	
C27	.047	300		RCP10M4733M	P388N-047	DD-503	CUB3S47	GEM-4147	3TM-S47	
C28	.01	600		RCP10M403M	P488N-01	DS-103	CUB4S	GEM-411	4TM-S1	
C29	.047	1000		RCP10M1473M	P1088N-047		CUB1S047	GEM-1047	1TM-S47	
C30	1	200		RCP10M105M	P288N-1	DF-104	CUB2P1	GEM-601	6TM-P1	
C31	100		10%	RCM20B101K	1469-0001	DS-101	32R5T1	MCB235	MS-31	
C32	82		10%	RCM20B820K	1469-0000S2	DS-820	32R5Q82	CNO-482	MS-482	
C33	.047	300		RCP10M2473M	P288N-047	DD-503	CUB2S47	GEM-4147	2TM-S47	
C34	.022	300		RCP10M2223M	P288N-022		CUB4S22	GEM-4122	2TM-S22	
C35	.47	300		RCP10M2474M	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C36	330		10%	RCM30B231K	1469-00022	DS-221	32R5T33	MCB337	MS-332	
C37	.01	600		RCP10M403M	P488N-01	DS-103	CUB4S	GEM-411	4TM-S1	
C38	820		10%	RCM20B821K	1469-00082	DS-821	1R7T82	MCB281	MS-382	
C39	170-700			17A378						
C40	1000			80X1	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	
C41	.047	400		RCP10M4473M	P488N-047	DD-503	CUB4S47	GEM-4147	4TM-S47	
C42	22	400		RCP10M4334M	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C43	39	5000	20%	47X756				S1DY-439		
C44A	1000			80X3	BPD-1X001	DD2-102	BYC5DD1	B1X210	5HK-D10	
B	1000									
C45	22	400		RCP10M4224M	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C46	10000	1600		47X815	DAC-37	DD16-103	HVE16S1	2HV-110	MB-S1	
C47	1000			80X1	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: AIRLINE PART No	CENTRALAB PART No.	CLAROSTAT PART No	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500Ω	½	78X31		RTV-588			Contrast
B	1meg	½			Not Req.		■ (UE4055-3	Volume
C	Switch				Not Req.			Push-Pull Off-On
R2A	500K	½	40X447	AB-59	A47-500K-S	QH-133	U50	Brightness
B	Shaft			AK-8	R3-3/16	NQ	D8-37	
R3A	7meg	½	40X474	AB-59	A47-7.5meg ▲		U82	Range, Note 1
B	Shaft			AK-8	R3-3/16		D8-37	

CONTROLS (cont)

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: AIRLINE PART No	CENTRALAB PART No.	CLAROSTAT PART No	IRC PART No	MALLORY PART No	INSTALLATION NOTES
R4A	1meg	½	40X445	AB-59	A47-1meg-S	QH-137	U54	Vert. Hold
B	Shaft			AK-8	R3-3/16	NQ	D8-37	
R5	500Ω	2(WW)	40X472	WN-501	39-500	112-500	R500L	Buzz
R6A	1500Ω	½	40X684	AB-8	B47-1500-S	BU-109	PTA152L	Vert. Lin.
B	Shaft			AK-19	Not Req.	TM4	Not Req.	
R7A	2.5meg	½	40X468	AB-83	B47-2.5meg-S	BU-239	SU585	Height
B	Shaft			AK-19	Not Req.	TM4	Not Req.	

■ "STA-LOC" Equivalent: FA52L, RUP16L, OP1000. Note 1 Alternate Part #40X485.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R8	2.2meg	
R9	10K	
R10	10K 2W	
R11	56Ω 5%	
R12	22K	
R13	470Ω	
R14	150Ω	
R15	1meg	
R16	5600Ω	
R17	1meg	
R18	33K	
R19	3600Ω 4W	#43X331
R20	68Ω	
R21	180K	
R22	100K	
R23	47000	
R24	100Ω	Note 1
R25	470Ω 1W	
R26	1500 1W	

ITEM No.	RATING	REMARKS
R27	2.2meg	
R28	1.5meg	
R29	680K	
R30	47K	
R31	4700Ω	
R32	5600Ω	
R33	470K	
R34	390K	
R35	10meg	
R36	22K	
R37	4700Ω	
R38	15K	
R39	2.2meg	
R40	1800Ω	
R41	1000Ω 1W	
R42	330K	
R43	820K	
R44	82K	
R45	330K	

ITEM No.	RATING	REMARKS
R46	3900Ω	
R47	220K	
R48	82K	
R49	22K	
R50	10K	
R51	220K	*(1meg)
R52	56K	
R53	470K	
R54	15K 1W	Note 1
R55	65K 5W	#42X342
R56	580Ω	
R57	560Ω	
R58	5800Ω	
R59	470K	
R60	52Ω 20W	#43X302
R61	7.5Ω	#43X307
R62	2500Ω 10W	
R63	88Ω	

* Alternate value. # Part Number. Note 1. Not used in some versions.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
K1	Audio Coupling	1000mmf, 5000mmf, 6800, 330K	76X16	
K2	Sync Coupling	150mmf, 270K	76X15	
K3	Vert. Integrator	3000mmf, 3900mmf, 5900mmf, 82000, 83000, 22K	76X7	
			Aerovox	PA-110
			Centralab	PC-100
			Cornell-Dubilier	115TMI
			Sprague	V-1/ V-3
			Mallory	MS-100

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Rom PART No.	NOTES
L1A	1st Video IF	9A3436				6221 ▲		
B	41.25MC Trap							
L2	2nd Video IF	9A2444						
L3	3rd Video IF	9A2435						
L4	Series Peaking Coil	†						30uh
L5	Resonant Choke							5.5uh ①
L6	Shunt Peaking Coil	36A23	19-3300A	19-3300A	TV-199A	61554		390uh ②
L7	4.5MC Trap	9A2366	20-1004	20-1004	TV-151	1460 *	SF-3	
L8	Shunt Peaking Coil	36A27	19-3330	19-3330	TV-200	6132	V2-7	325uh
L9	Series Peaking Coil	36A45	19-3375a	19-3375 a	TV-198 a	6150 a	V2-6 a	270uh ③
L10	1st Sound IF	9A3434	20-1026	17-1026				
L11	Quadrature Coil	9A2367	20-1005	20-1005	TV-121	1480		
L12	RF Choke	9A2380	19-1001	19-1001	BC-562	4804		1.5uh

① Some versions may use 30uh choke Part #9A2375. † Part of L3.
② Wound on 22K resistor.
③ Wound on 68000 resistor.
▲ Disregard secondary winding.
▲ Parallel with 22K resistor.
* Disregard tap.
* Parallel with 68000 resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Rom PART No.	Thordorson PART No.	NOTES
L13	103Ω		8-38A1003	HH-7	TV-185	6313		HH-7	Horiz. Osc. Tapped ②60Ω
L14	58Ω		9A2373	HH-5 a		6315		HH-5 a	Horiz. Waveform

a Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: AIRLINE PART No	Halldorson PART No	Merit PART No	Rom PART No	Stancor PART No	Thordorson PART No	Triad PART No
L15	260A	40Ω	1Hy.	52X95-11	26C44 ①	C-3991①		C-2329①	26C44 ①	C-27X

① Drill New Mounting Hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No	Halldorson PART No.	Merit PART No	Rom PART No	Rogers PART No	Stancor PART No	Thordorson PART No	Triad PART No
T1	Vert. Osc.	54X19-A	26A03	A-3003	V40S	VBO19	A-3125	26A03	A-97X
	Alt. Vert. Osc.	54X19	26A03	A-3003	V40S	VBO19	A-3125	26A03	A-97X
T2	Vert. Output	51X207-1A	26873 ①	A-2655	V30?①	VO25 ②	VO-108	26873 ①	A-118X①
	Alt. Vert. Output	51X207	26873 ①	A-2655	V30?①	VO26 ②	VO-108	26873 ①	A-118X①
T3	Yoke-Horiz. (34MH) (80°)-Vert. (38MH)	C9A2452 ④	Y-16 ⑤ ⑥	MDF-92 ⑤ ⑥ ⑦	Y90F19/43 ⑤ ⑥		DY-16A ⑤ ⑥ ⑦	Y-16 ⑤ ⑥	Y-45 ⑤ NW-21 ⑤
	Alt. Yoke	9A2452 ⑤	Y-16 ⑤ ⑥	MDF-92 ⑤ ⑥ ⑦	Y90F19/43 ⑤ ⑥		DY-16A ⑤ ⑥ ⑦	Y-16 ⑤ ⑥	Y-45 ⑤ NW-21 ⑤
	Rear Cover & Centering Device	2A435							YC-1
	Yoke Retainer	8X247							CL-1
	Yoke Clamp	30X61							
T4	Horiz. Output	53X386A							
	Alt. Horiz. Output	53X381							

① Drill new mounting hole(s).
② Connect as autoformer.
③ Do not use screen tap.
④ Includes R56 and R57.
⑤ Use original rear cover and centering device.
⑥ Connect same as original.
⑦ Remove horizontal damping network from yoke.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T5	6000Ω	3-4Ω	51X306	34849	A-3026	AU-601	A-3877	34849	S-6X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V C IMP	REPLACEMENT DATA: AIRLINE PART No.	QUAM PART No.	NOTES
SP1	4"x 6"	PM	3-4Ω	12A531	46A1	

RECTIFIERS

ITEM No	RATING: CURRENT (Measured)	REPLACEMENT DATA: AIRLINE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.260A	66X23 ①	HA504 ①	SD500 ①	40K ①	SR500 ①	① Silicon Type
M2	.260A	66X23 ①	HA504 ①	SD500 ①	40K ①	SR500 ①	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE*	REPLACEMENT DATA: AIRLINE PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M3	1N60 (CK706)*		1N60	1N60	1N60	Video Det. (Pigtail) * Alternate

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Tuner	25A1157	VHF
	Tuner	25A1157-3	UHF
	Magnet	2A476	Beam Alignment used with some picture tubes.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

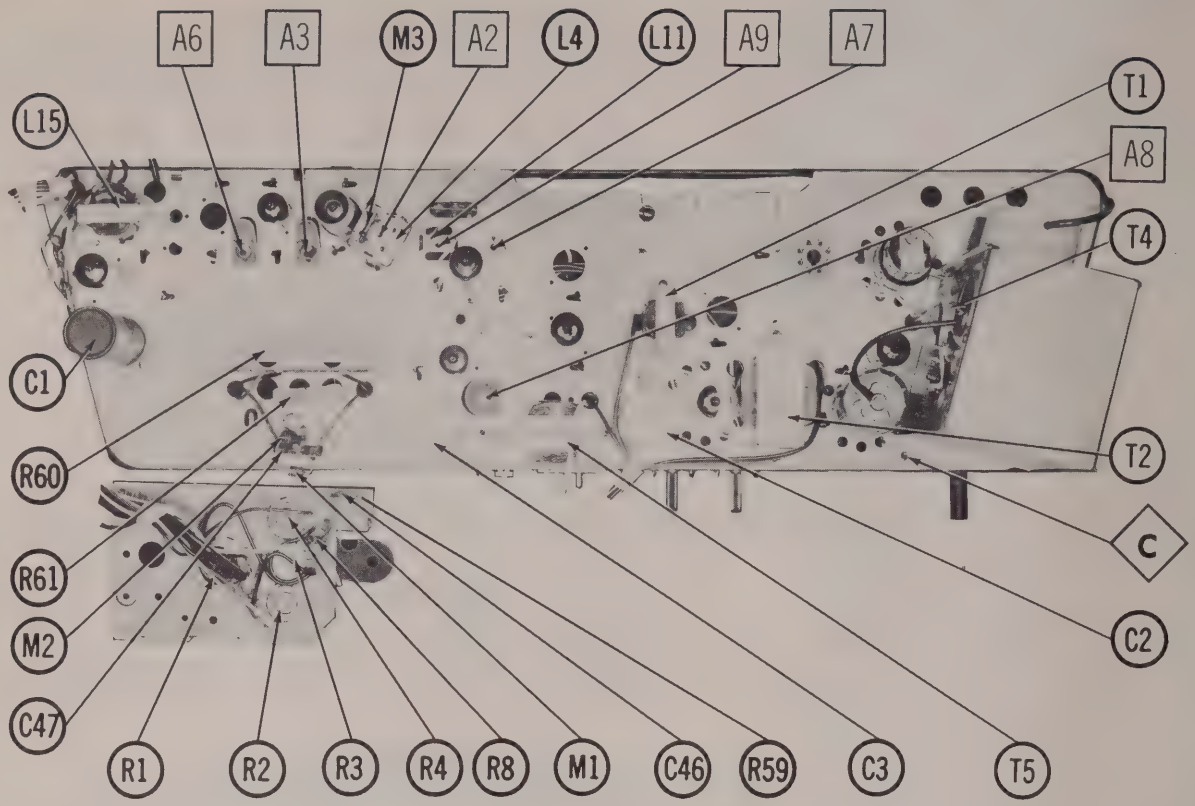
NAME	PART NO.	DESCRIPTION
Safety Glass	1TX303-1	
Mask	4X1475-1	
Knob	10A985-1	VHF Channel Selector
Knob	10A987-1	Fine Tuning
Knob	10A893-2	UHF Tuning
Knob	10A894-3	UHF Indicator
Knob	10A933-1	Off-On Volume
Knob	10A944-1	Brightness, Range, Vertical
Knob	10A933-1	Contrast
Dial	56X131-1	Channel Indicator
Dial	11X180-1	Background

WIRING DATA

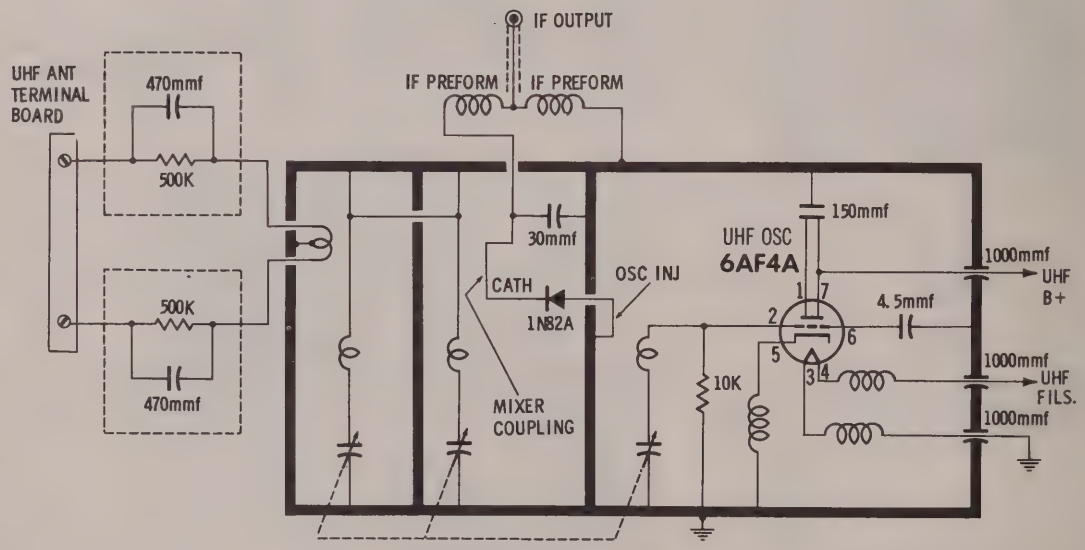
High Voltage Lead	Use BELDEN No. [redacted]
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8736 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. [redacted]
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

AIRLINE MODELS WG-4082A, 4092A, 4182A, 4192A, 5082A, 5086A, 5087A, 5088A, 5092A, 5097A, 5182A, 5186A, 5187A, 5188A, 5192A, 5197A

FOLDER 1



CHASSIS TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF TUNER #25A1159-3

TUNER PARTS LIST AND DESCRIPTIONS

25A1187

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆						
ITEM No.	USE	TYPE		ITEM No.	USE	TYPE
V201	RF Amplifier	2ER5/GG		V202	Mixer-Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	27		N750 10%		N750-DI 25	TCZ-27	C10Q27U	CN7-427	10TCU-Q27	
C202	27		N750 10%		N750-DI 25	TCZ-27	C10Q27U	CN7-427	10TCU-Q27	
C203	27		N750 10%		N750-DI 25	TCZ-27	C10Q27U	CN7-427	10TCU-Q27	
C204	27		N750 10%		N750-DI 25	TCZ-27	C10Q27U	CN7-427	10TCU-Q27	
C205	30									
C206	28				DI-27	DD-270	C10Q27C	CNO-427	10TS-Q27	
C207	1000				EF-001	MFT-1000		CT250A		
C208	1.8-7.0					829-7				
C209	100				EF-0001	MFT-100				
C210	.5-3.5									
C211	.5-3.5									
C212	33				NPO-DI 33	DTZ-33		GP433	10TS-Q33	
C213	18				DI-18	DD-180	L10Q33	CNO-418	10TS-Q33	
C214	7.25					DD-7R5	L10V8	GP580	5GA-V75	
C215	1000				EF-001	MFT-1000		CT250A		
C216	1000				EF-001	MFT-1000		CT250A		
C217	1000				EF-001	MFT-1000		CT250A		
C218	1000				EF-001	MFT-1000		CT250A		
C219	1000				EF-001	MFT-1000		CT250A		

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

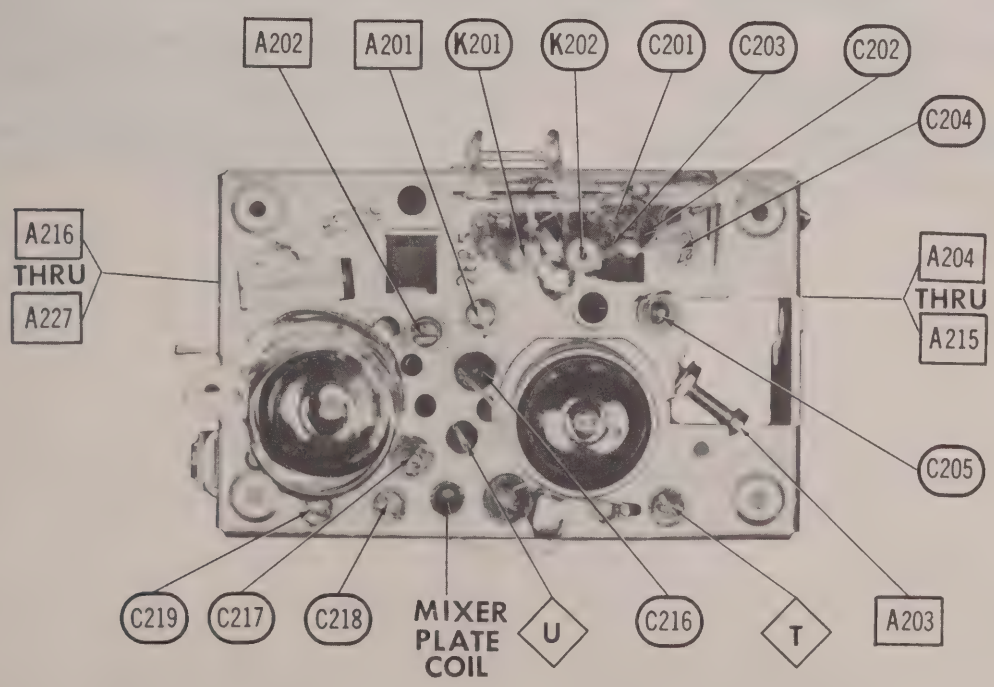
ITEM No.	RATING	REMARKS
R201	47K	
R202	1000Ω	
R203	2700Ω	

ITEM No.	RATING	REMARKS
R204	220K	
R205	1000Ω	
R206	4700Ω	

ITEM No.	RATING	REMARKS
R207	4700Ω	

COMPONENT COMBINATIONS

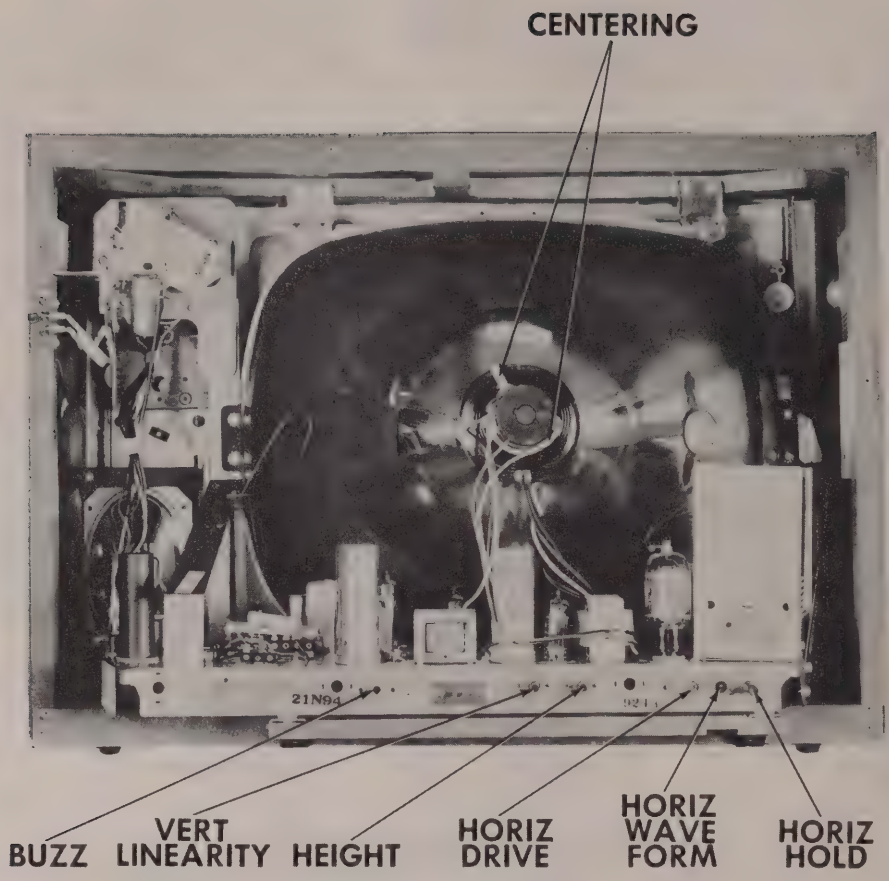
ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
K201	Antenna Filter	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1
K202	Antenna Filter	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1



TOP VIEW

AIRLINE MODELS WG-4082A, 4092A, 4182A, 4192A, 5082A, 5086A, 5087A, 5088A, 5092A, 5097A, 5182A, 5186A, 5187A, 5188A, 5192A, 5197A

FOLDER 1



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Suggested Alignment Tools:
B1 .... 1/4" Nut Driver
B2 .... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

Tune in a station and adjust the Horizontal Hold until the picture is just about to tear out of sync as can be seen at the top of the picture.

Turn the Contrast control fully counterclockwise and Brightness control clockwise so that the picture appears washed out. Turn the Horizontal Drive trimmer (B1) clockwise until white vertical bars (drive lines) appear in the left center portion of the raster, then counterclockwise until the white bars just disappear.

Connect the vertical amplifier of a scope to point Ⓒ. Low side to chassis. Adjust the Horizontal Waveform slug (B2) until the round and sharp peaks of the waveform are equal in amplitude. See Fig. 4. Keep the picture in sync during this adjustment.

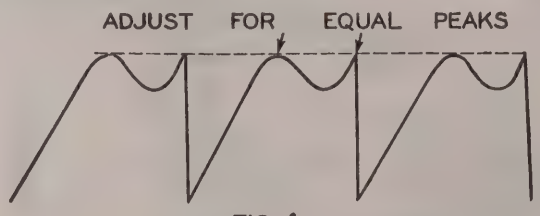


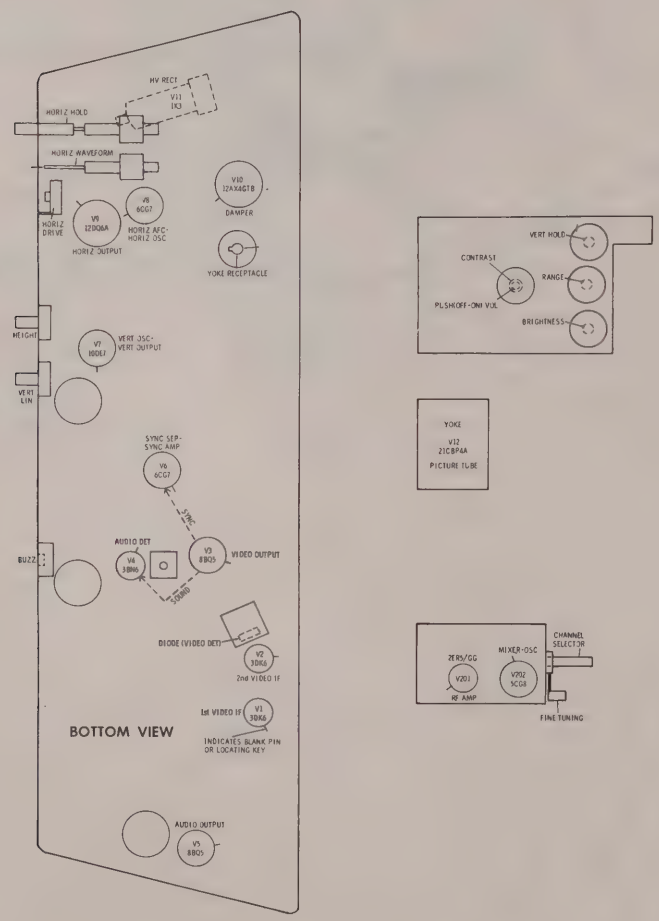
FIG. 4

RESISTANCE MEASUREMENTS

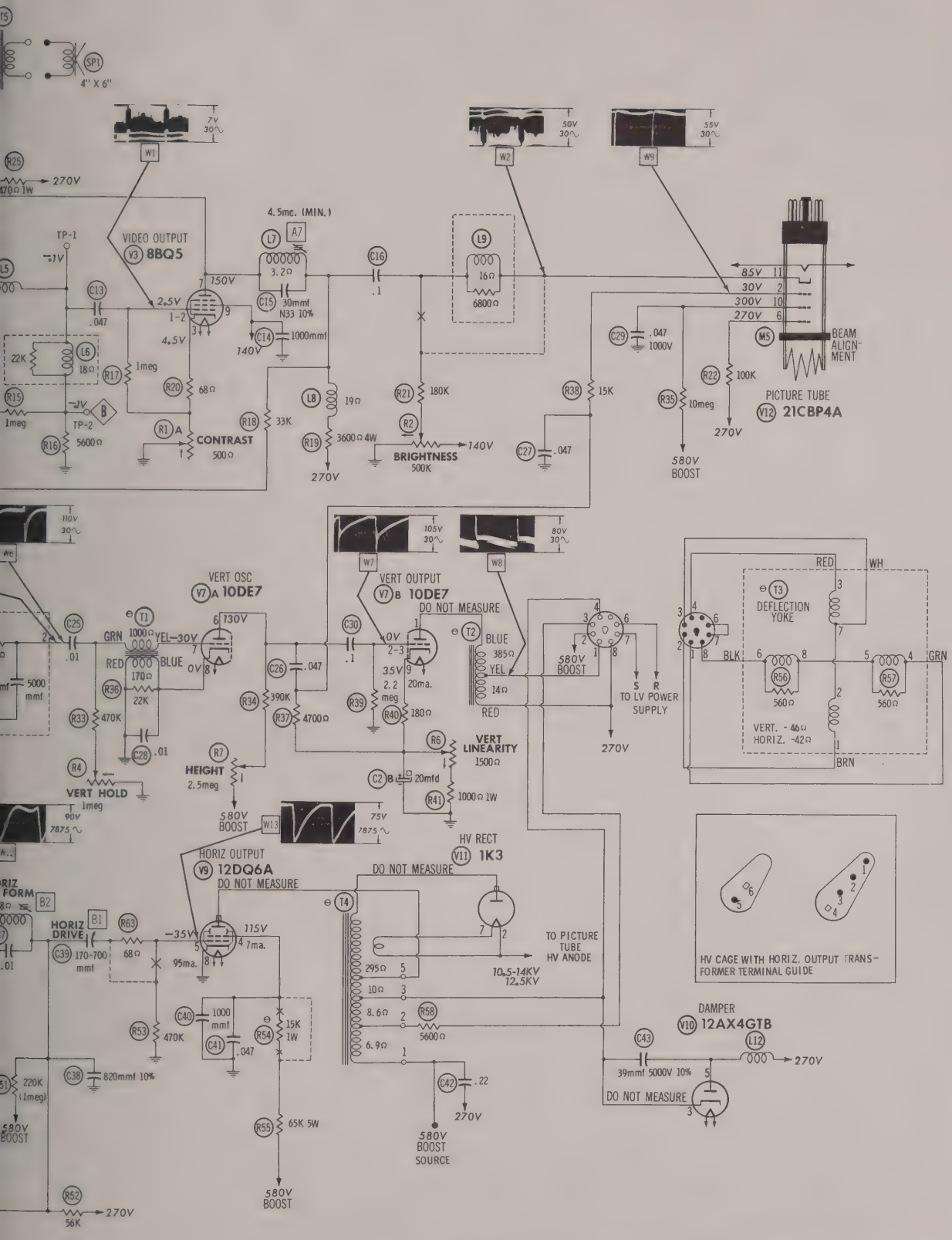
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3DK6	800K	56Ω	12.5Ω	11.5Ω	†10K	†10K	0Ω		
V2	3DK6	.1Ω	150Ω	11.5Ω	10.5Ω	†3000Ω	†3000Ω	0Ω		
V3	8BQ5	• 1meg	• 1meg	• 140Ω	18Ω	16Ω	NC	†3600Ω	NC	†2500Ω
V4	3BN6	• 250Ω	6Ω	10Ω	10.5Ω	†7200Ω	4.6Ω	†330K		
V5	8BQ5	100Ω	100Ω	150Ω	20Ω	18Ω	NC	†850Ω	NC	†470Ω
V6	6CG7	†1.5meg	2.2meg	0Ω	14.5Ω	16Ω	†14K	40K	0Ω	0Ω
V7	10DE7	†400Ω	2.2meg	2.2meg	12.5Ω	14.5Ω	• ‡2meg	• 900K	160Ω	• 1800Ω
V8	6CG7	†56K	410K	0Ω	6Ω	4.5Ω	†0Ω	1.5meg	410K	0Ω
V9	12DQ6A	0Ω	7.5Ω	TP	‡80K	470K	NC	10Ω	0Ω	TOP CAP ‡10Ω
V10	12AX4GTB	TP	NC	¶350K	NC	†.2Ω	TP	2Ω	4.5Ω	
V11	1K3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡305Ω
V12	21CBP4A	7.5Ω	• 22K	Pin 6 †100K	Pin 10 ‡10meg	Pin 11 • 300K	Pin 12 6Ω			
V201	2ER5/GG	0Ω	•45K	0Ω	1Ω	†3500Ω	0Ω	0Ω		
V202	5CG8	4700Ω	†7200Ω	0Ω	1Ω	2Ω	†3500Ω	†2500Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 270V SOURCE.
‡ MEASURED FROM PIN 3 OF V10.

NC NO CONNECTION
TP TIE POINT



TUBE PLACEMENT CHART



AIRLINE MODELS WG-4082A, 4092A, 4182A, 4192A, 5082A, 5086A, 5087A, 5088A, 5092A, 5097A, 5182A, 5186A, 5187A, 5188A, 5192A, 5197A

FOLDER 1

PHOTOFACT* Folder with CIRCUITRACE*

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

RCA VICTOR CHASSIS
KCS129A, B, C, D, E, F

MODEL 210DT575 (Ch. KCS129A)

RCA VICTOR CHASSIS
KCS129A, B, C, D, E, F

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 463 FOLDER 2

PHOTOFACT* Folder with CIRCUITRACE*

EIA ELECTRONIC INDUSTRIES ASSOCIATION MEMBER

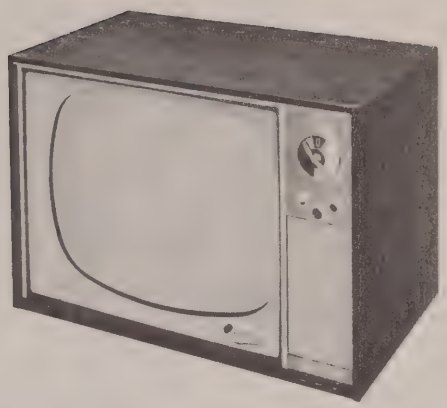
RCA VICTOR CHASSIS KCS129A, B, C, D, E, F

RCA VICTOR CHASSIS KCS129A, B, C, D, E, F

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL 210DT575

1. Remove 5 spring clips holding rear cover. Remove antenna connections. Remove the rear cover.
2. Remove 8 push-on type knobs from the front.
3. Remove speaker leads, yoke plug, picture tube socket, and HV lead.
4. Remove 2 chassis brace screws, one near Contrast control, other on HV cage.
5. Remove 2 metal screws holding the lower front control bracket.
6. Remove 4 nuts holding tuner mounting bracket.
7. Remove 5 chassis bolts from bottom of cabinet.
8. Remove chassis.



MODEL 210DT575 (Ch. KCS129A)

TRADE NAME	RCA Victor	MODELS	CHASSIS
		210DT572, 210DT575, 210DT577	KCS129A
		210DT572U	KCS129B
		210DK595, 210DK596, 210DK597	KCS129C
		210DK595U	KCS129D
		210DK635, 210DK636	KCS129E
		210DK635U	KCS129F

MANUFACTURER	Radio Corporation of America, RCA Victor Tele. Div., Camden 8, N.J.
TYPE SET	Television Receiver
TUBES	VHF-Eighteen, UHF-Nineteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 200 Watts, 1.85 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 7 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE

Two fuse wires are used for filament protection. (For location, see M2 and M3 in photo "Chassis Bottom View".)

FUSE DEVICE

A 12.5Ω fusible resistor (R100) is used for horizontal sweep protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up VHF Oscillator, remove Channel Selector knob.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus control. (For location, see "Tube Placement Chart".)

SYNC STABILITY

Sync stability may be varied by means of a Sync Stabilizer control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Stabilizing coil. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Width coil. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive trimmer. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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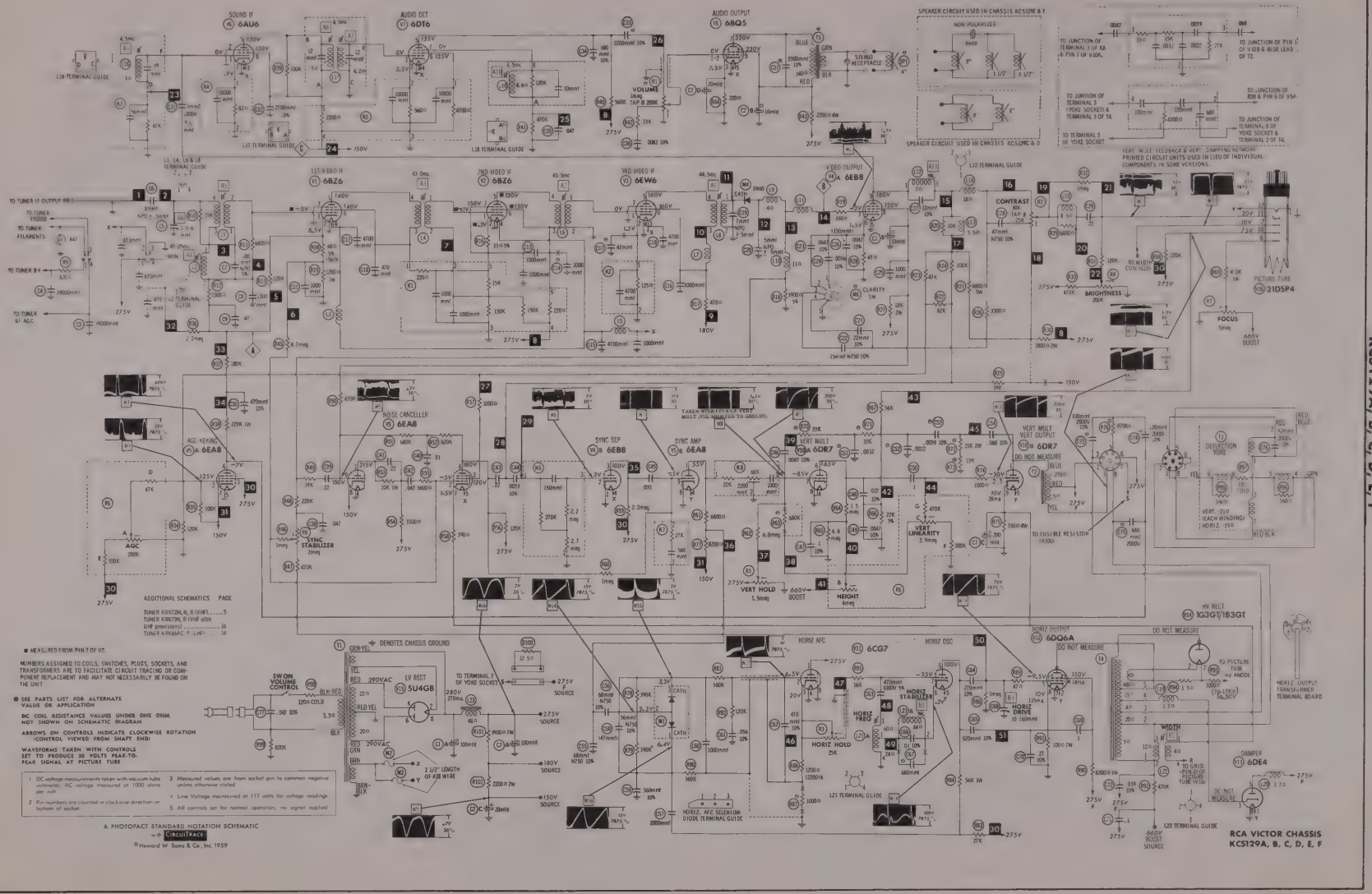
JA594

SET 463 FOLDER 2


RCA VICTOR CHASSIS KCS129A, B, C, D, E, F
FOLDER 2
PAGE 2
PAGE 19
SOUND IF
AUDIO DET
AUDIO OUTPUT
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO OUTPUT
SYNC SEP
SYNC AMP
VERT MULT
VERT OUTPUT
HORIZ AFC
HORIZ OSC
HORIZ OUTPUT
DAMPER
CONTRAST
BRIGHTNESS
FOCUS
VOLUME
VERT HOLD
HEIGHT
HORIZ HOLD
HORIZ FREQ
HORIZ DRIVE
WIDTH
VERT LINEARITY
CLARITY
SYNC STABILIZER
HORIZ STABILIZER
AGC
AGC KEYING
NOISE CANCELLER
LV RECT
HV RECT
PICTURE TUBE
DEFLECTION YOKE
SPEAKER CIRCUIT USED IN CHASSIS KCS129C & F
SPEAKER CIRCUIT USED IN CHASSIS KCS129C & D
ADDITIONAL SCHEMATICS PAGE
DENOTES CHASSIS GROUND
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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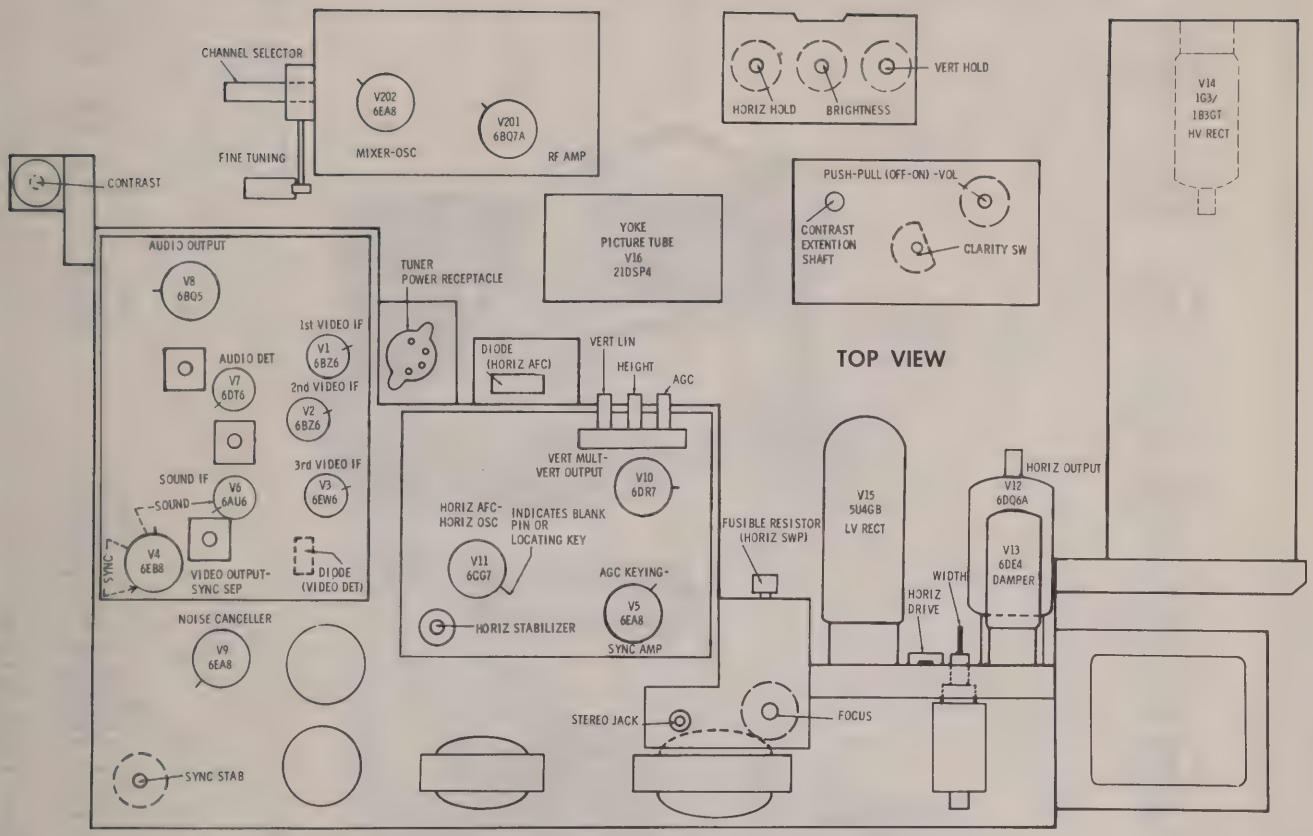
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

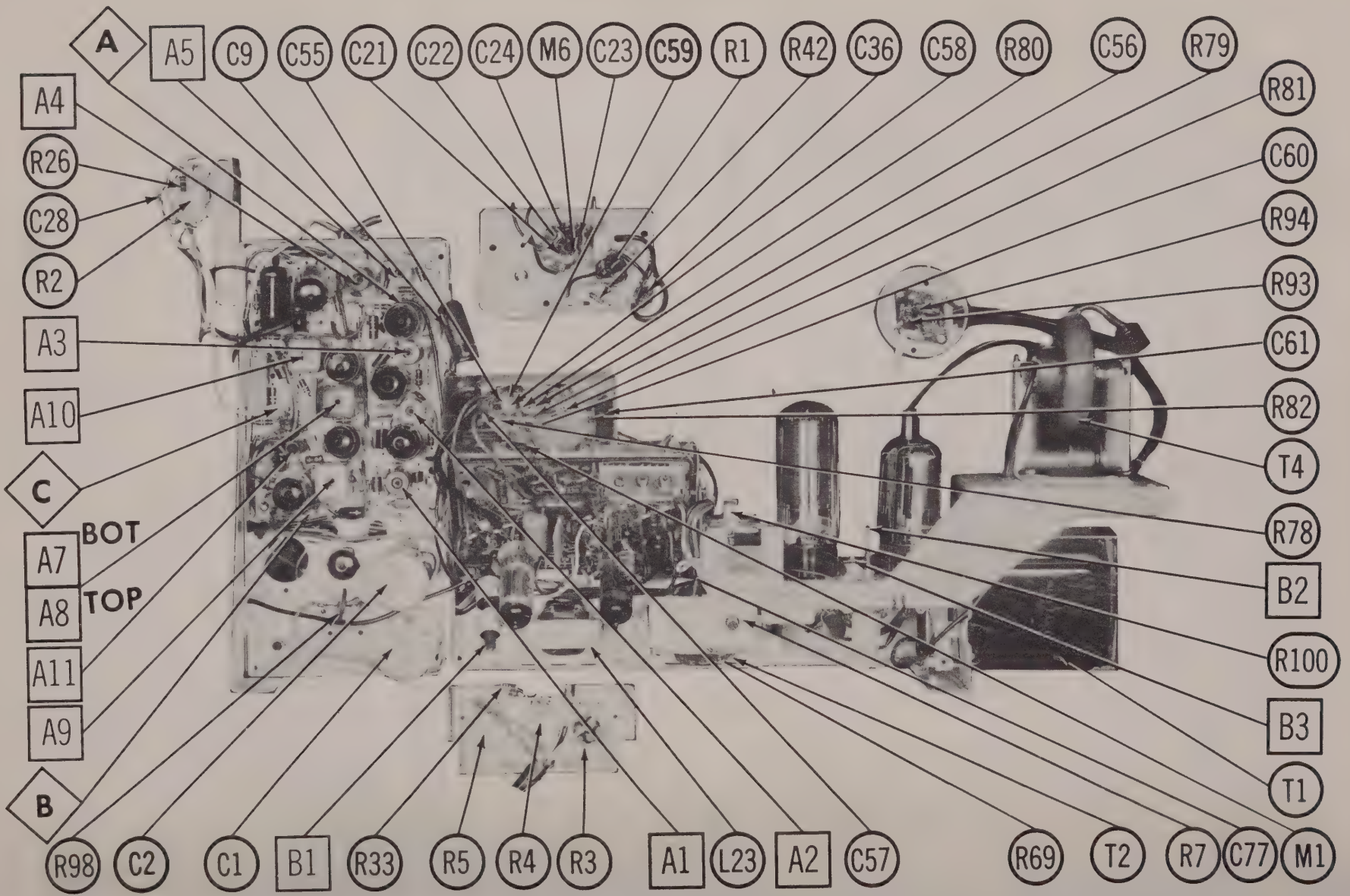
The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound V15, Fuses (Filament)

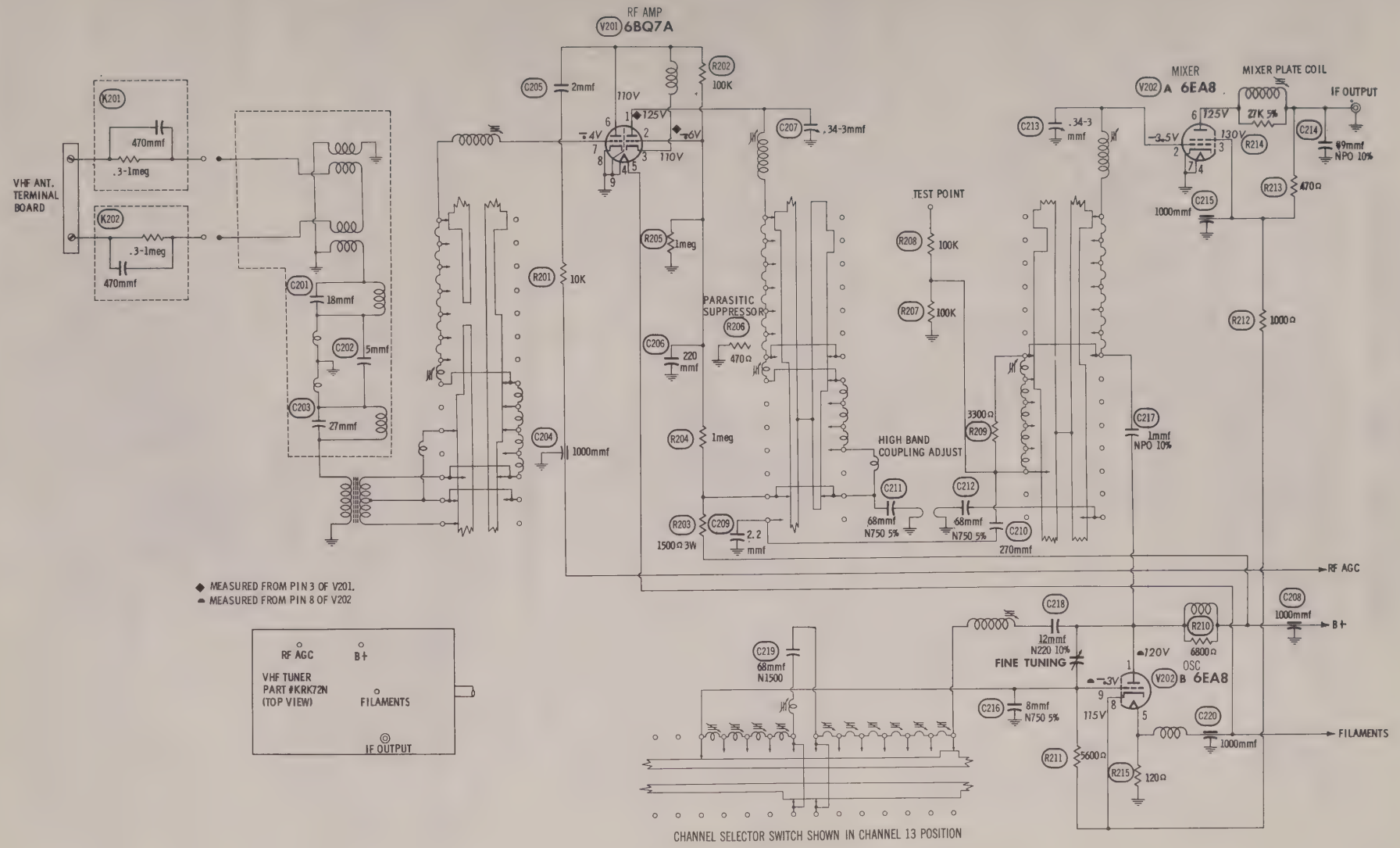
SWEEP FAILURE
No raster, has sound Fusible Resistor (Horiz. Swp)., V11, V12, V13, V14, V16, V15
No vertical deflection V10
Poor vert. linearity or foldover V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V15, V11, V12, V13
Vert. off freq. V10
Horiz. off freq. Diode (Horiz. AFC), V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V6, V7, V8
Overloaded picture V5

SYNC FAILURE
No vert. sync V10
No horiz. sync V11
No vert. or horiz. sync V4, V5



CHASSIS - TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER KRK72M, N, R

RCA VICTOR CHASSIS KCS129A, B, C, D, E, F

TUNER
KRK 72N
PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amplifier	6BQ7A	V202	Mixer-Osc.	6EA8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	18				DI-18	DD-180	L10Q18	GP418	10TS-Q18	
C202	5				DI-5	DD-050	L10V5	GP550	10TS-V5	
C203	27				DI-27	DD-270	L10Q27	GP427	10TS-Q27	
C204	1000				EF-001	MFT-1000				
C205	2				NPO-SI 2	TCZ-2R2	C10V2C	CNO-522	10TCC-V22	
C206	220				DI-220	DD-221	L10T22	GP322	10TS-T22	
C207	.34-3									
C208	1000				EF-001	MFT-1000				
C209	2.2				NPO-SI 2.2	TCZ-2R2	C10V22C	CNO-522	10TCC-V22	
C210	270				SI-270	D6-271	L10T27	GP327	10TS-T27	
C211	68		N750 5%			DTN-68	C10Q68U	CN7-468	10TCU-Q68	
C212	68		N750 5%			DTN-68	C10Q68U	CN7-468	10TCU-Q68	
C213	.34-3									
C214	39		NPO 10%		NPO-DI 39	TCZ-39	C10Q39C	CNO-439	10TCC-Q39	
C215	1000				EF-001	MFT-1000				
C216	8		N750 5%				C10V8U			
C217	1		NPO 10%		NPO-SI 1	TCZ-1		CNO-510	10TCC-V10	
C218	12		N220 10%						10TCE-Q12	
C219	68		N1500			TCL-68				
C220	1000				EF-001	MFT-1000				

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	10K	
R202	100K	
R203	1500Ω 3W	
R204	1meg	
R205	1meg	

ITEM No.	RATING	REMARKS
R206	470Ω	
R207	100K	
R208	100K	
R209	3300Ω	
R210	6800Ω	

ITEM No.	RATING	REMARKS
R211	5600Ω	
R212	1000Ω	
R213	470Ω	
R214	27K 5%	
R215	120Ω	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No.	REPLACEMENT DATA
K201	Antenna Isolation	470mmf - .3-1meg	104328	Centralab RC-471 Sprague AC1-1
K202	Antenna Isolation	470mmf - .3-1meg	104328	Centralab RC-471 Sprague AC1-1

ALIGNMENT INSTRUCTIONS

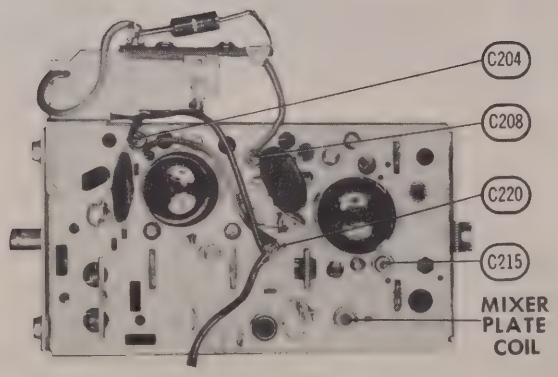
VHF OSCILLATOR ALIGNMENT

Suggested Alignment Tools: GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537

Set the Fine Tuning to the center of its range for each channel adjusted. The adjustments are accessible one at a time as the Channel Selector is rotated and should be made in sequence from the highest to the lowest channel in the area. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attemped in the field.



TOP VIEW

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Disable the Horizontal Output circuit by connecting a 150Ω 10W resistor in series with the plate lead of the Horizontal Output tube. Connect the negative lead of a 12.5 volt bias supply from pin 5 (grid) of the Horizontal Output tube. Connect positive lead to chassis.
Suggested Alignment Tools: A1 thru A5, A7, A8, A9, All .... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A10 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519

VIDEO IF ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point (A). Positive to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	1500mmf Ceramic Capacitor	High side to Mixer grid wafer contact thru access hole (adjacent to Mixer grid wafer) located in left side of tuner shield. Low side to chassis.	44.5MC (Unmod)	Any non-interfering channel	DC probe to point (B). Common to chassis. (Across Video Det. load).	A1	Adjust for maximum deflection. Adjust generator output for 3 volts on meter when finally peaked.
2.	"	"	45.5MC	"	"	A2	"
3.	"	"	43.0MC	"	"	A3	"
4.	"	"	47.25MC	"	"	A4	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
Connect a 180Ω resistor from pin 5 (plate) to pin 6 (screen) of the 1st Video IF Amp.
Couple signal generator loosely to sweep output cable to provide markers.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	1500mmf Ceramic Capacitor	High side to Mixer grid wafer contact thru access hole (adjacent to Mixer grid wafer) located in left side of tuner shield. Low side to chassis.	45.0MC (10MC Swp)	42.5MC 45.75MC	4	Vert. Amp. thru demodulator probe to pin 5 (plate) of 1st Video IF Amp. Low side to chassis. Calibrate scope for 0.5 volts peak to peak.	A5, A6, & Mixer Plate Coil	Adjust Mixer Plate Coil and A5 for maximum gain, using A6 to obtain curve shape with markers as shown in Fig. 1. Remove 180Ω resistor.
6.	"	"	"	42.5MC 45.0MC 45.75MC	"	Vert. Amp. thru 10K to point (B). Low side to chassis. (Across Video Det. load). Calibrate scope for 5 volts peak to peak.	A1, A2, A3	Check for response similar to Fig. 2. If necessary, retouch A1, A2 and A3 for desired response.
7.	Fig. 3	High side thru pad (Fig. 3) to Mixer grid wafer contact thru access hole (adjacent to Mixer grid wafer) located in left side of tuner shield. Low side to chassis.	Not used	45.75MC	"	USE VTVM DC probe to point (B). Common to chassis.		Adjust generator output to provide exactly 1.5 volts on VTVM.
8.	1500mmf Ceramic Capacitor	Remove pad. High side to Mixer grid wafer contact thru access hole (adjacent to Mixer grid wafer) located in left side of tuner shield. Low side to chassis.	45.0MC (10MC Swp)	41.25MC	"	Leave VTVM connected. Connect scope as in step 6.	A1, A3	Retouch A1 and A3 for 1.0 to 1.5 volts on VTVM while maintaining response similar to Fig. 2.
9.	Fig. 4	Across antenna terminals thru matching network (Fig. 4).	Each VHF Channel in turn	42.5MC 45.75MC 47.25MC	All VHF Channels	Vert. Amp. thru 10K to point (B). Low side to chassis.	A1, A2	Check for response similar to Fig. 2. Retouch A1 and A2 SLIGHTLY to correct for tilt or other conditions that are approximately the same on all channels.

SOUND IF ALIGNMENT

Connect the negative lead of a 10 volt bias supply to point (A). Positive to chassis.
Set Contrast fully clockwise.
Set VTVM for negative voltage readings.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001mfd	High side to point (B). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru diode probe (Fig. 5) to pin 7 (grid 3) of Audio Detector. Common to chassis.	A7, A8, A9	Adjust for maximum negative voltage on meter. Attenuate generator for a reading between 1.0 and 1.5 volts on meter when finally peaked. Peak A7 and A8 with maximum core separation. Adjust A9 for maximum deflection.
11.	Remove VTVM and diode probe. Connect scope across Volume control. Turn off signal generator and tune in the strongest TV station in the area and adjust Volume control for normal volume. Preset coil slug (A10) flush with the top of coil form. While observing scope and listening to the sound, adjust A10 clockwise to a peak. Continue turning clockwise to a second louder peak and adjust for maximum on this second peak.						

ALIGNMENT INSTRUCTIONS (cont)

4.5MC TRAP ALIGNMENT

Set Contrast fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	.01mfd	High side to point (B). Low side to chassis.	4.5MC (400∿ Mod)	Any non-interfering channel	Vert. Amp. thru demodulator probe to cathode of picture tube. Low side to chassis.	All	Adjust for MINIMUM 400∿ indication on scope.

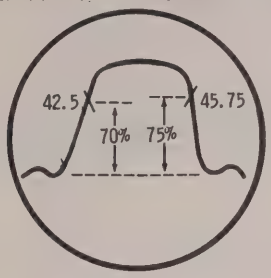


FIG. 1

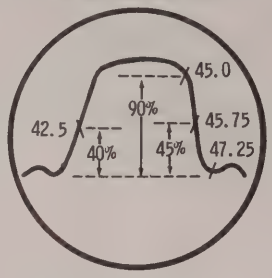


FIG. 2

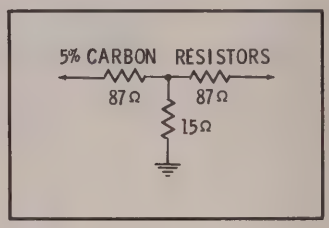


FIG. 3

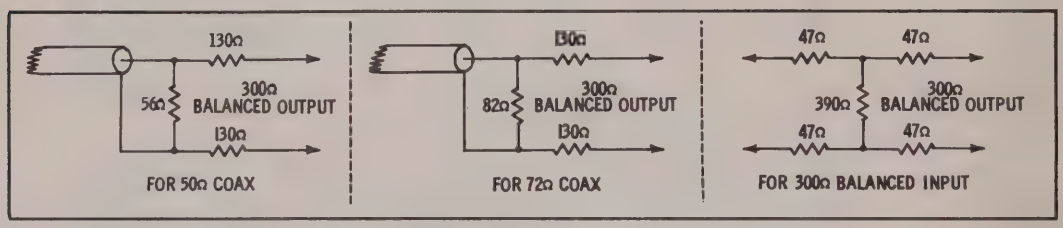


FIG. 4

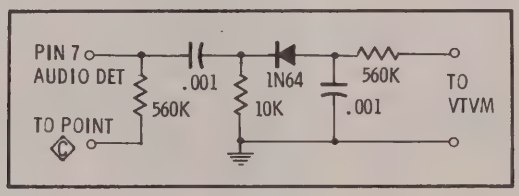
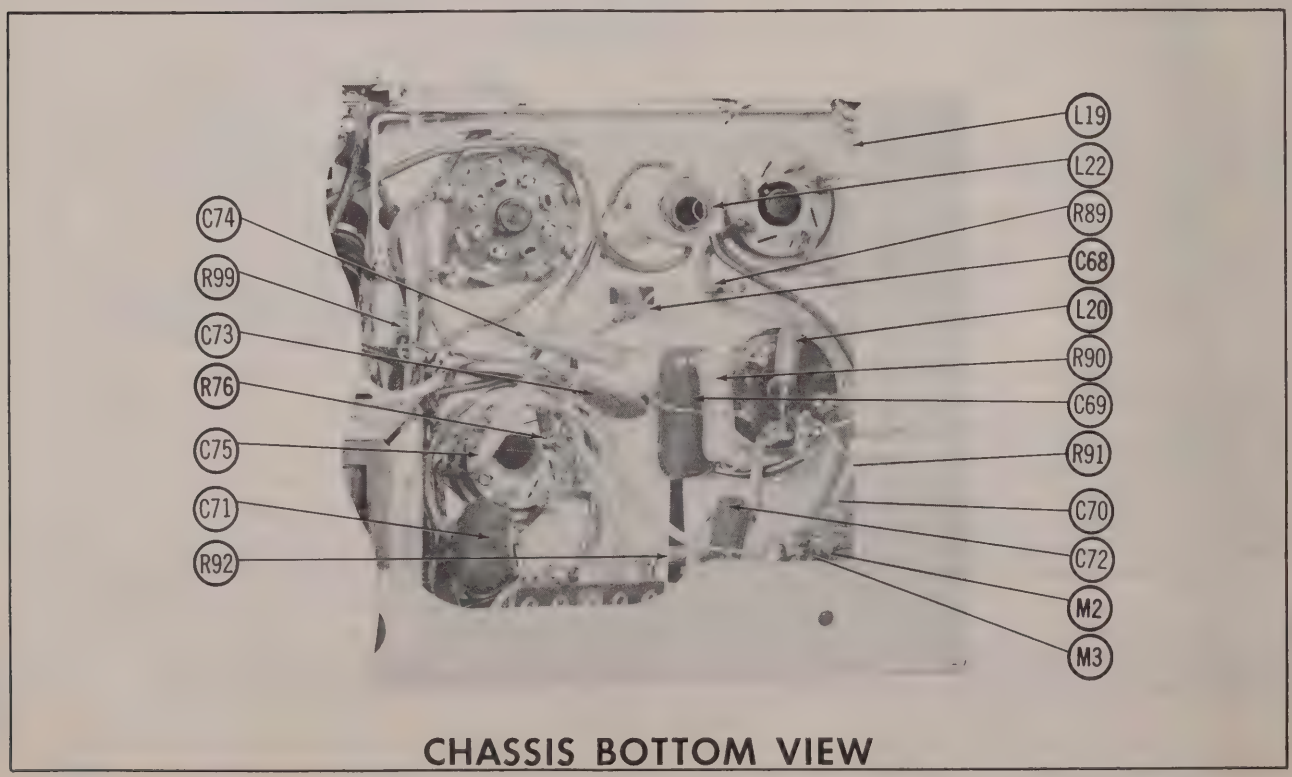


FIG. 5



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp.	6EW6
V4	Video Output-Sync Sep.	6EB8
V5	AGC Keying-Sync Amp.	6EA8
V6	Sound IF Amp.	6AU6
V7	Audio Det.	6DT6
V8	Audio Output	6BQ5

ITEM No.	USE	TYPE
V9	Noise Canceller	6EA8
V10	Vert. Mult-Vert. Output	6DR7
V11	Horiz. AFC-Horiz. Osc.	6CG7
V12	Horiz. Output	6DQ6A
V13	Damper	6DE4
V14	HV Rect.	1G3GT/ 1B3GT
V15	LV Rect.	5U4GB

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	RCA Victor PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V16	21DSP4		21DSP4 ①		21DSP4 ②	① Aluminized ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.		
C1A	▲100	400	107336		C0894		TMT-186	TVL-3685		
B	■10	350			BR1505		TD-150-50	TVA-1311		
C	▲200	25								
C2A	▲100	400	102411	AFH4-103-40	D0805	FP421.3	TMQ-196	TVLS-4666.2*		
B	■10	400								
C	▲20	350								
D	20	50								

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	39000					DD-403	BYB6S4	GP140	5HK-S4	
C4	39000					DD-403	BYB6S4	GP140	5HK-S4	
C5	1.5-6			107177		829-6		CT552		
C6	8		NPO ±.5mmf	107594	NPO-DI 8.2		C10V8C		10TCC-Q82	
C7	100		NPO 5%	105300	NPO-DI 100	DTZ-100	C10T10C	CNO-310	10TCC-T10	
C8	1000			77252	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	
C9	.47	200			P288N-47		CUB2P47	GEM-2047	2TM-P47	
C10	470			78622	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C11	1000			77252	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	
C12	4700			73473	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C13	1000			102234A	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	
C14	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D10	①
C15	4700			73473	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C16	1000			102234A	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	
C17	47				DI-47	DD-470	L10Q47	GP447	5GA-Q47	①
C18	4700			73473	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C19	7		NPO ±.5mmf	104177	NPO-DI 6.8	DTZ-6R8	C10V7C	CNO-568	10TCC-V68	
C20	5		NPO ±.5mmf	104178	NPO-DI 5	DTZ-4R7	C10V5C	CNO-547	10TCC-V47	
C21	22		10%	102793	DI-22	DD-220	L10Q22C	GP422	10TS-Q22	
C22	15		N750 10%	107595	N750-DI 15	DTN-15	C10Q15U	CN7-415	10TCU-Q15	
C23	.0047	600	10%		V84C6D47-10%		PM6D47	JL-247	6TM-D47	②
C24	.0056	400	10%				PM6D6	GEM-61256	6TM-D6	
C25	1000			102234A	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	
C26	.0047	600			V84C6D47-10%		PM6D47	JL-247	6TM-D47	
C27	12		10%	103245	DI-12	DD-120	L10Q12	GP412	10TS-Q12	
C28	47		N750 10%	102882	N750-DI47	DTN-47	C10Q47U	CN7-447	10TCU-Q47	
C29	.22	600			P688N-22		CUB6P22	GEM-6022	6TM-P22	
C30	470		10%	102230	DI-470	DD-471	BYA10T47	GP347	10TS-T47	
C31	3	1000	±1mmf	104204		DD-3R3	C10V3C	CNO-533	10TS-V33	
C32	2700		10%	104131	DI-2700		PM6D3	GEM-1623	10TS-D27	
C33	2200		10%		DI-2200		PM6D22	GP222	10TS-D22	③
C34	680		10%	104135	DI-680	DD-681	1R5T68	GP368	10TS-T68	
C35	.047	200			P288N-047	DD-503	CUB2S47	GEM-4147	2TM-S47	
C36	.0082	400	10%		P684CM-D82			GEM-16282	6TM-D8	
C37	3300		10%		DI-3300		PM6D33	JL-233	10TS-D33	④
C38	.047	200			P288N-047	DD-503	CUB2S47	GEM-4147	2TM-S47	
C39	.22	400			P488N-22		CUB4P22	GEM-4022	4TM-P22	
C40	.01	600			P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C41	.22	200			P288N-22		CUB2P22	GEM-2022	2TM-P22	
C42	.047	600			P688N-047	DD-503	CUB6S47	GEM-6147	6TM-S47	
C43	.22	200			P288N-22		CUB2P22	GEM-2022	2TM-P22	
C44	.0033	600	10%		V84C6D33-10%		PM6D33	JL-233	6TM-D33	
C45	.033	400			P488N-033		CUB4S33	GEM-4133	4TM-S33	
C46	.0047	600	10%		V84C6D47-10%		PM6D47	JL-247	6TM-D47	
C47	.1	600	10%		V84C6P1-10%		PM6P1		6TM-S1	
C48	.022	600	10%		V84C6S22-10%		PM6S22	GEM-1612	6TM-S22	
C49	.0047	600	10%		V84C6D47-10%		PM6D47	JL-247	6TM-D47	
C50	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No	RATING CAP	VOLT	TOL	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C51	.0012	500			P684CM-0012	D6-122	CUB6D1	GEM-615	6TM-D15	
C52	.0022	600			P684N-0022	D6-222	CUB6D2	GEM-5222	6TM-D22	
C53	.0039	600	10%		P684CM-D39		PM6D4	GEM-1614	6TM-D4	
C54	.068	400	10%		V84C4S68-10%		PM4S68		4TM-S68	
C55	68		N750 10%	104224	N750-D1 68	DTN-68	C10Q68U	CN7-468	10TCU-Q68	
C56	68		N750 10%	104224	N750-D1 68	DTN-68	C10Q68U	CN7-468	10TCU-Q68	
C57	1000			102334A	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	
C58	56		N750 10%			TC2-56	C10Q56U	CN7-456	10TCU-Q56	⑩
C59	560		10%	106348	DE-560	DD-561	1R5T56	GP456	10T2-T56	
C60	1000			102334A	BPD-001	DD-102	BYA10D1	B-210	5HK-D10	
C61	.056	200	10%		P685S6		P6M5S6		6TM-S6	
C62	470		10%	102330	DE-470	DD-471	6R5T47	GP347	10T2-T47	
C63	470	1000	5%	106472			GP347		10T3-T47	
C64	270		10%	107325	DE-270	DD-271	L10T27	GP327	10T2-T27	
C65	820		10%	108080	3469-00083	DD-821	1R5T82	MCB251	MB-382	
C66	.01	400	10%		V84C4S-10%		PM4S1	GEM-1611	4TM-S1	
C67	680			106578	BPD-00068	DD-681	BYA10T68	GP380	10T3-T68	①
C68	10-160			100849						
C69	.1	600			P688N-1	DF-104	CUB2F1	GEM-601	6TM-P1	
C70	.27	200	10%		V84C2P25-10%		PM2P25	GEM-2025	2TM-P25	
C71	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C72	.039	600	10%		P684CM-039		PM6S4	GEM-1614	6TM-S4	
C73	100	3000	10%					2DY-310		
C74	120	3000	10%		4K 120		D38G-121	L10T12		
C75	680	2000								
C76	82	3000	10%					2DY-482		
C77	.047	800	10%		V84C6S47-10%		PM6S47	GEM-1615	6TM-S47	

① Not used in some versions.
② Alternate value 150mmf.
③ Ch. KCS129C, D, E, F use 1000mmf 10% in this application.
④ Ch. KCS129C, D, E, F use 4700mmf in this application.
⑤ Some versions may use a component combination in this application(Part #107726).
⑥ Alternate value 47mmf.
⑦ Some versions may use a component combination in this application (Part #107543).

CONTROLS

ITEM No	RATING RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg tap @ 200K	½	107534					Volume, Note 1
B	Switch							Push-Pull Off-On
R2	50K tap @ 25K	½	107530					Contrast
R3	25K	½	107527					Horiz. Hold
R4A	500K	2	107531	AB-46	A47-500K-S	Q11-139	U43	Brightness
B	Shaft			AE-9	R3-5/16	MQ	D6-37	
R5A	1.5meg	½	107532	AB-742	A47-1.5meg-S	Q11-138	U155	Vert. Hold
B	Shaft			AE-8	R3-5/16	MQ	D6-37	
R6A	200K	.2	107725					AGC
B	4meg	.2						Height
C	2.5meg	.2						Vert. Lin.
D	47K	.2						AGC Grid Coupling
E	100K	.2						AGC Delay Coupling
F	500K	.2						Vert. Lin. Limiter
G	470K	.2						Vert. Output Grid
R7A	1meg	½	107396	AB-87	B47-5meg-S	B11-141	PTA56L	Focus
B	Shaft			AE-19	Not Req.	TM4	Not Req.	
R8A	2meg	½	100863	EX-79	B47-2meg-S	B11-139	PTA28L	Sync Stabilizer
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

Note 1. Ch. KCS129C, D use Part #107446.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R9	820Ω	
R10	15K	
R11	6800Ω	
R12	1000Ω	
R13	120K	
R14	68Ω 5%	*(56Ω)
R15	1200Ω 1W	
R16	33Ω 5%	
R17	470Ω	
R18	3900Ω 5%	
R19	330Ω	
R20	10K	
R21	6800Ω 5W	#107025
R22	82K	
R23	47K	
R24	100K	
R25	39K	
R26	3300Ω	
R27	18K 2W	
R28	47Ω	
R29	6800Ω	
R30	1800Ω 2W	
R31	120K	
R32	1meg	
R33	470K	
R34	120K	
R35	100K	
R36	2.2meg	
R37	180K	
R38	220K 1W	
R39	100K	
R40	560K	

ITEM No.	RATING	REMARKS
R41	470K	
R42	33K	
R43	2200Ω 4W	#102314
R44	220Ω	
R45	4.7meg	
R46	1meg	
R47	470K	
R48	220K	
R49	39K	
R50	470K	
R51	680K	
R52	820K	
R53	10K 1W	
R54	3300Ω	
R55	5600Ω	
R56	120K	
R57	1000Ω	
R58	390Ω	
R59	2.2meg	
R60	1meg	
R61	6800Ω	
R62	6.8meg	
R63	680K	Note 1
R64	1.5meg	
R65	6.8meg	
R66	22K 5%	
R67	56K	
R68	220K	
R69	470K 1W	
R70	33K	Note 2
R71	15K	Note 2
R72	15K 2W	Note 2

ITEM No.	RATING	REMARKS
R73	12K	Note 2
R74	1000Ω	
R75	3300 4W	#107292
R76	4700Ω	Note 3
R77	8200Ω	
R78	390K	
R79	390K	
R80	560K	
R81	560K	
R82	120K	
R83	27K	
R84	56K 1W	
R85	56K	
R86	1200Ω	*(3200Ω)
R87	1000Ω	Note 1
R88	1meg	
R89	47Ω	
R90	8200Ω 3W	
R91	100Ω 7W	
R92	470K	
R93	1000Ω	
R94	1.5Ω	
R95	560K	
R96	560Ω	
R97	100 COLD	
R98	120 COLD	#107181
R99	820K	
R100	12.5Ω	#104295
R101	3900Ω 7W	#102314
R102	2200Ω 2W	

RCA Victor Part Numbers.
Note 1. Not used in some versions.
Note 2. Some versions may use a component combination in this application (Part #107726).
Note 3. Some versions may use a component combination in this application (Part #107543).

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No	REPLACEMENT DATA
K1	Video IF Decoupling	1000mmf, 1000mmf, 2200Ω, 220Ω, 15K, 150K, 150K	107277	
K2	Video IF Cathode	4700mmf,125Ω	107279	
K3	Sound IF Grid	56mmf, 47K	104329	Sprague PRC-1
K4	Sound IF Cathode	10000mmf, 82Ω	107278	
K5	Sound IF Decoupling	10000mmf, 10000mmf, 560Ω, 2200Ω, 4700Ω	107276	
K6	Sync Sep. Grid	150mmf, 270K, 2.2meg, 2.7meg	107300	
K7	Sync Amp. Grid	560mmf, 27K	107492	
K8	Vert. Integrator	1000mmf, 2200mmf, 22K, 68K	107281	

COILS (RF-IF)

ITEM No	USE	REPLACEMENT DATA RCA Victor PART No	Gramer PART No	Meissner PART No	Merit PART No	Miller PART No	Ram PART No	NOTES
L1	1st Video IF	107202						
L2	4T 23MC Trap	107203						
L3	1st Choke							
L4	2nd Video IF	104233						
L5	2nd Choke							
L6	3rd Video IF	107204						
L7	RF Choke							
L8	4th Video IF	104233						
L9	Series Peaking Coil	101819	19-3036	19-3036	TV-180	6176	VP-1	36uh
L10	Shunt Peaking Coil	101287	19-3180	19-3260	TV-185	6181	VP-5	250uh
L11	RF Choke	107465			SW-830			2.7uh
L12	4.5MC Trap	104903						
L13	Shunt Peaking Coil		19-3125	19-3125	TV-195	6153	VP-4	120uh
L14	Series Peaking Coil	107199			TV-307	6156		750uh
L15	Series Peaking Coil	104230	19-3300	19-3300	TV-199	6155		300uh
L16	1st Sound IF	104136						①
L17	2nd Sound IF	107201						②
L18	Quadrature Coil	106795						④
L19	RF Choke	107235	19-1009	19-1009		6811		8.2uh
L20	RF Choke	107385	19-1009	19-1009		6611		8.2uh

① Includes 39mmf cap. ② Includes 12mmf caps. ③ Includes 10mmf cap. & 130K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI	SEC.	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L21A	84Ω		107264						Horiz. Osc. Tapped ② 34Ω
B	44Ω								Horiz. Stabilizer

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA RCA Victor PART No	Halldorson PART No	Merit PART No	Miller PART No	Ram PART No	Rogers PART No	Stancor PART No	Thordarson PART No	Triad PART No.
L22	Width Coil Pri. (2.5-15MH) Sec. (.1- 2MH)	107337								

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ℃)	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L23	.270A	48Ω	.9 Hy.	100286	28C44				28C44	C-28X

TRANSFORMER (POWER)

ITEM No	RATING PRI	SEC. 1	SEC. 2	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No	Ram PART No	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ① 1.85A	620VCT 3A	5V ②	107382						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ② 8.7A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	Vert. Output	107338	28S73	A-2854	V307 ①	VO34	VO-100 ③	28S73	A-118X ③
T3	Yoke-Horiz. (18MH) (90°)-Vert. (36MH)	107408	Y-25 ④	MDF-99 ⑥	T90T19/43 ④⑤	PCM2045 ④⑤	DY-23A ④	Y-25 ④	Y-43 & NW-4 ⑥
	Centering Device	104368							
T4	Horiz. Output	107431	FLY-150 ⑦ *	HVD-116 ⑦ *	X386 ⑦ *		HO-289 ⑦ *	FLY-150 ⑦ *	D-139 ⑦ *

① Connect as autoformer.
② Cut and tape red and yellow lead.
③ Use 8 to 1 turns ratio.
④ Requires new rear cover, centering device, and yoke clamping device.
⑤ Connect horizontal yoke damping capacitor across yoke terminals #3 and #7. Connect yoke #3 to plug pin #4, yoke #2 and #7 to plug #5, yoke #1 to plug #6.
⑥ Connect same as original.
⑦ Drill new mounting hole(s).

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	5	5	5	5		5	5	5
	4	4	4	4		4	4	4
	3	3	3	3		3	3	3
	2	2	2	2		2	2	2
	1	1	1	1		1	1	1
Connect Width Coil Across	2 & 1	2 & 1	2 & 1	2 & 1		2 & 1	3 & 1	2 & 1

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	7500Ω	3-4Ω	104193 ①	24S52	A-2931	AU-802	A-3878	24S52	S-7X	① Used in Ch. KCS129A, B.
	7600Ω	3-4Ω	100037 ②	26S48	A-3020	AU-804	A-3949	26S48	S-9Z	② Used in Ch. KCS129C, D, E, F

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	107474 ①	4A1	① Models 21DT572, 2U, 5, 7
	6"	PM		107526 ②		② 2 used in Models 21DK596, 5U, 6, 7.
	8"	PM		107475 ③		③ Models 21DK635, U, 21DK636
	3½"	PM		102119 ④		④ 2 used in Models 21DK635, 5U, 6

RECTIFIERS

ITEM No	RATING CURRENT (Measured)	REPLACEMENT DATA RCA Victor PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1		107288 ①					① Selenium Diode

FUSES

ITEM No	TYPE	RATING	REPLACEMENT DATA RCA Victor PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M2		2½" Length #28 Wire						
M3		3½" Length #28 Wire						

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA RCA Victor PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M4	1N60	76875B	1N60	1N60	1N60	Video Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M5	Tuner	KRK72N	VHF Ch. KCS129A, E
	Tuner	KRK72R	VHF Ch. KCS129C
	Tuner	KRK73N	VHF with UHF provisions, Ch. KCS129B, F
	Tuner	KRK73R	VHF with UHF provisions, Ch. KCS129D
	Tuner	KRK66AC	UHF Ch. KCS129B, F
	Tuner	KRK66P	UHF Ch. KCS129D
M6	Switch	107363	Clarity, Ch. KCS129A, B, E, F, H
	Switch	107447	Clarity, Ch. KCS129C, D
	Printed Board	107349	Main, Less Tubes, Ch. KCS129A, B
	Printed Board	107448	Main, Less Tubes, Ch. KCS129C, D, E, F
	Printed Board	107513	Sweep, Less Tubes

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	107497	Models 21ODK596, 5U, 6, 7
Safety Glass	107515	Models 21ODK635, 5U, 6
Safety Glass	106375	Models 21ODT572, 2U, 5, 7
Mask	107582	Models 21ODK596, 5U, 6
Mask	107583	Model 21ODK597
Mask	107588	Models 21ODK635, 5U, 6
Mask	106464	Models 21ODT572, 2U, 5, 6, 7

RCA VICTOR CHASSIS KCS129A, B, C, D, E, F

FOLDER 2

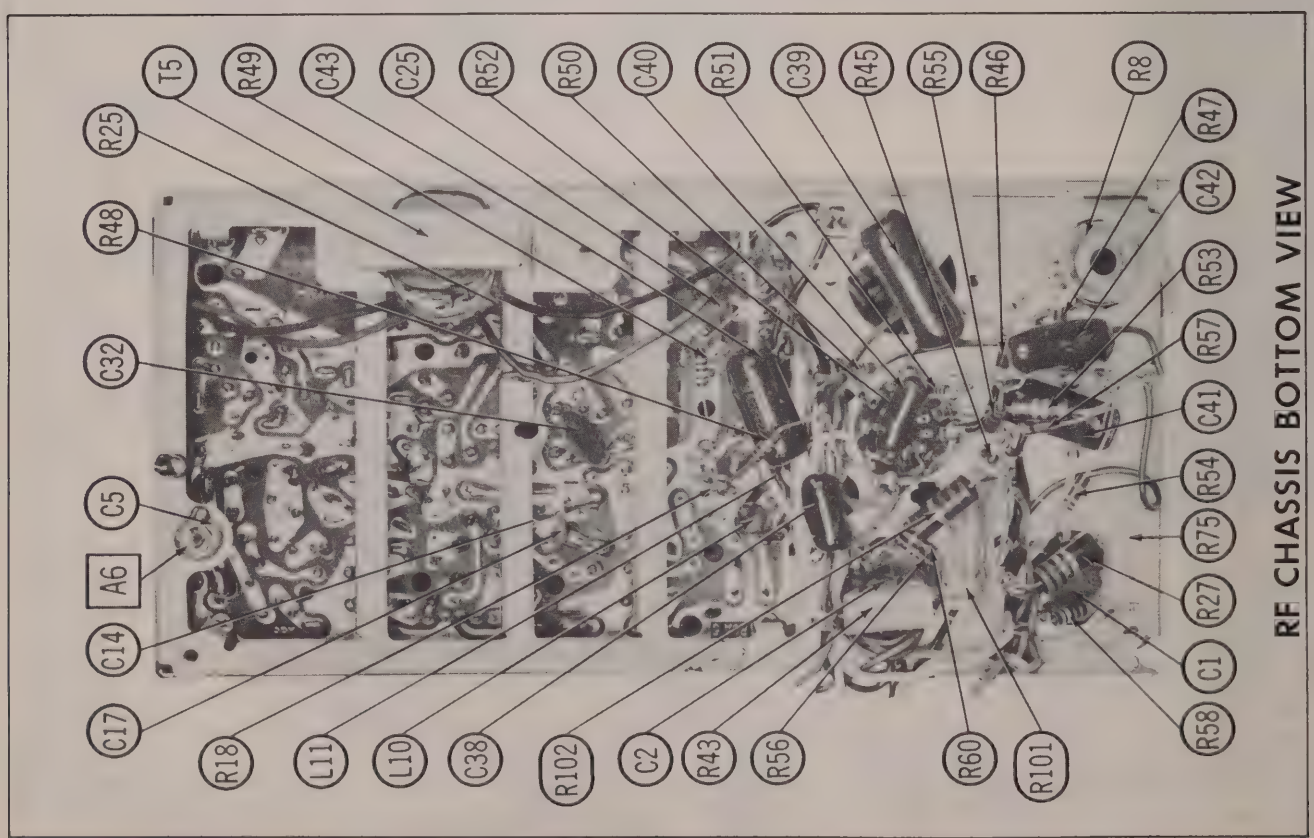
PARTS LIST AND DESCRIPTIONS (Continued)

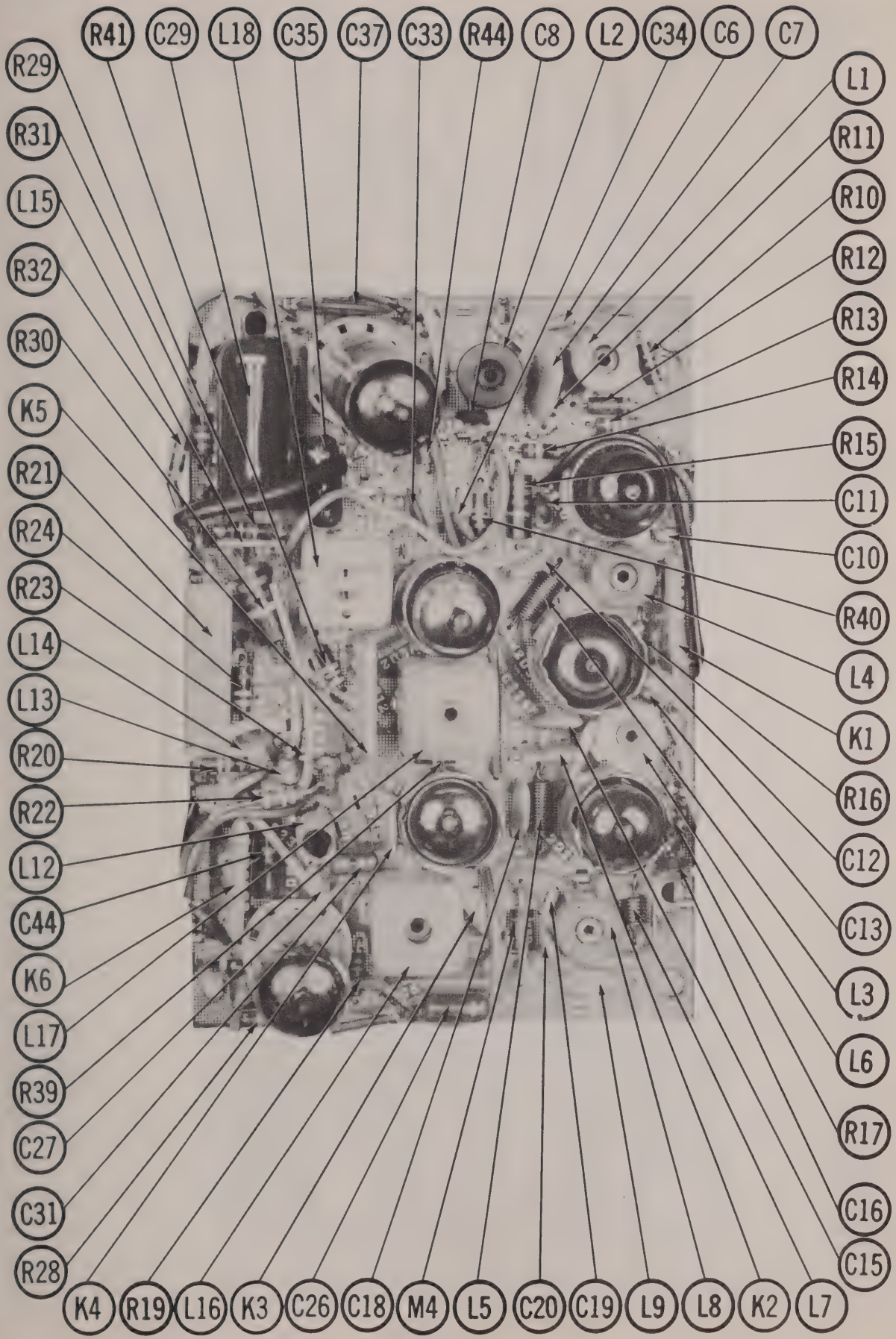
CABINETS & CABINET PARTS (cont)

NAME	PART NO.	DESCRIPTION
Knob	106099	VHF Channel Selector, Model 210DK597
Knob	106098	VHF Channel Selector, Models 210DK595, U
Knob	107491	VHF Channel Selector, Model 210DK596
Knob	107372	Channel Selector & Dial Assembly, Models 210DK635, 5U, 6, 210T572, 2U, 5, 7
Knob	107269	UHF Channel Selector, Models 210DK635U, 210DT572U
Knob	102653	UHF Channel Selector, Model 210DK595U
Knob	106596	Fine Tuning, Models 210DK635, 5U, 6, 210DT572, 2U, 5, 7
Knob	106530	Fine Tuning, Model 210DK597
Knob	106529	Fine Tuning, Models 210DK595, U
Knob	107583	Fine Tuning, Model 210DK596
Knob	107266	UHF Dial, Models 210DK635U, 210DT572U
Knob	106102	UHF Dial, Models 210DK595U
Knob	107264	Off-On-Volume, Contrast, Models 210DT572, 2U, 5, 7
Knob	107483	Off-On-Volume, Contrast, Model 210DK597
Knob	107482	Off-On-Volume, Contrast, Models 210DK595, U
Knob	107484	Off-On-Volume, Contrast, Model 210DK596
Knob	107488	Brightness, Models 210DK595, 5U, 6, 7, 210DK635, 5U, 6
Knob	107490	Vert. Hold, Models 210DK595, 5U, 6, 7, 210DK635, 5U, 6
Knob	107489	Horiz. Hold, Models 210DK595, 5U, 6, 7, 210DK635, 5U, 6
Knob	107265	Horiz., Brightness, Vert., Models 210DT572, 2U, 5, 7
Knob	107343	Clarity, Models 210DK635, 5U, 6, 210DT572, 2U, 5, 7
Knob	107585	Clarity, Model 210DK597
Knob	107584	Clarity, Models 210DK595, U
Knob	107586	Clarity, Model 210DK596
Escutcheon	106512	Fine Tuning, Models 210DK595, 5U, 6, 7, 210DK635, 5U, 6
Cabinet	M4593	Models 210DK595, U
Cabinet	M4594	Model 210DK596
Cabinet	M4595	Model 210DK597
Cabinet	X4632	Models 210DK635, U
Cabinet	X4633	Model 210DK636
Cabinet	Z4581	Models 210DT572, U
Cabinet	Z4582	Models 210DT575
Cabinet	Z4583	Model 210DT577

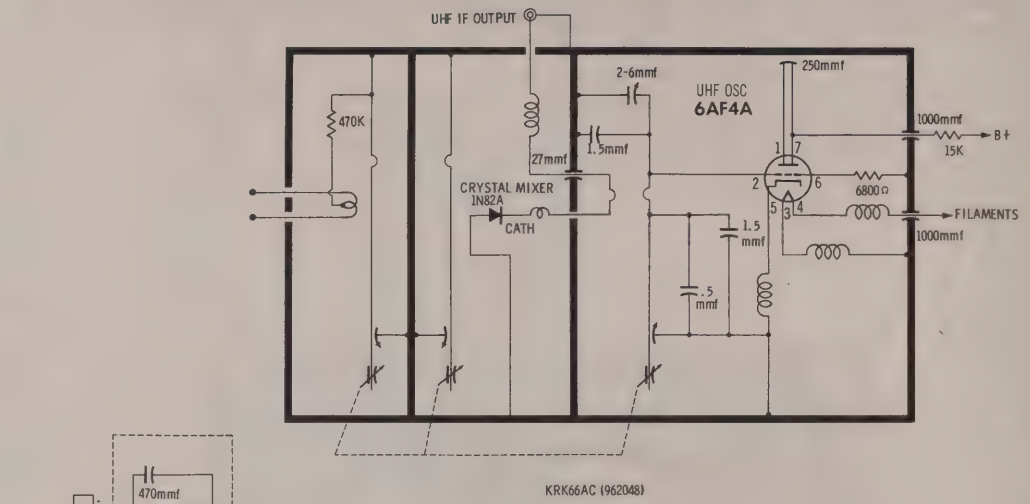
WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor

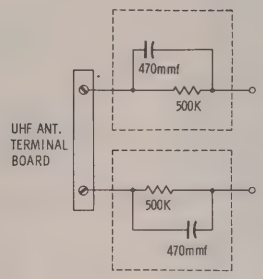


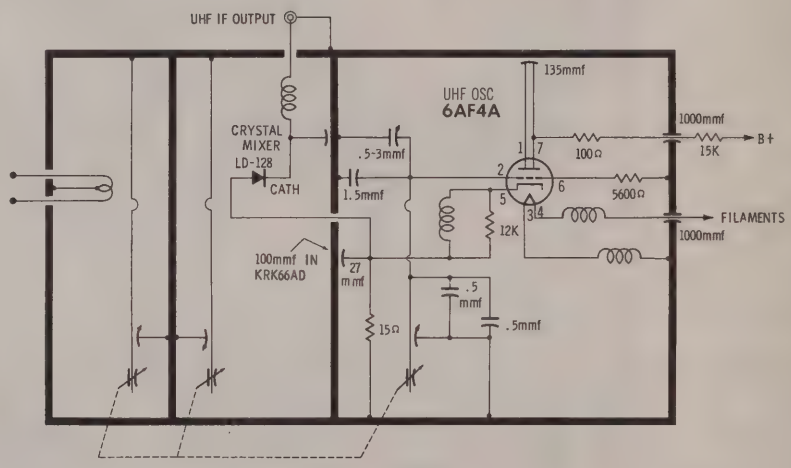


MAIN PRINTED BOARD

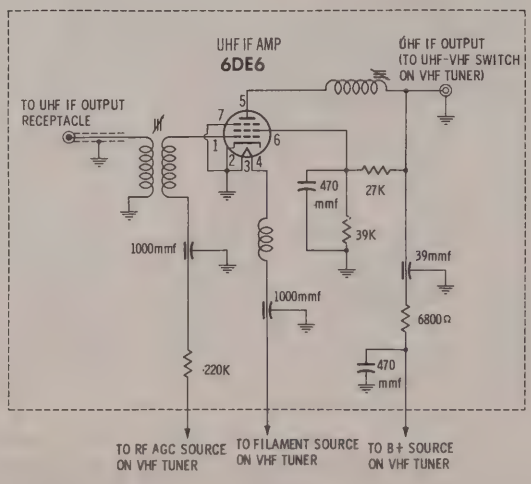


KRK66AC (962048)





KRK66AC, AD, P (962047)



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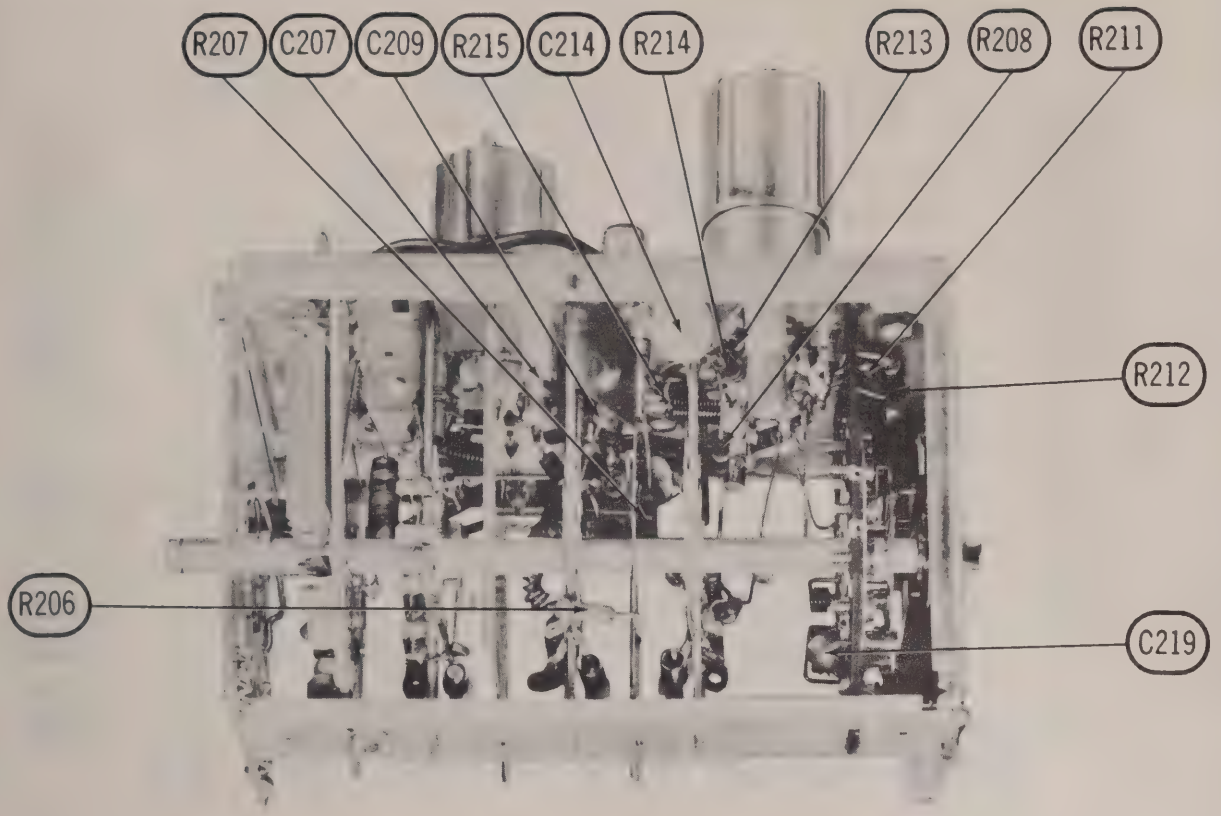
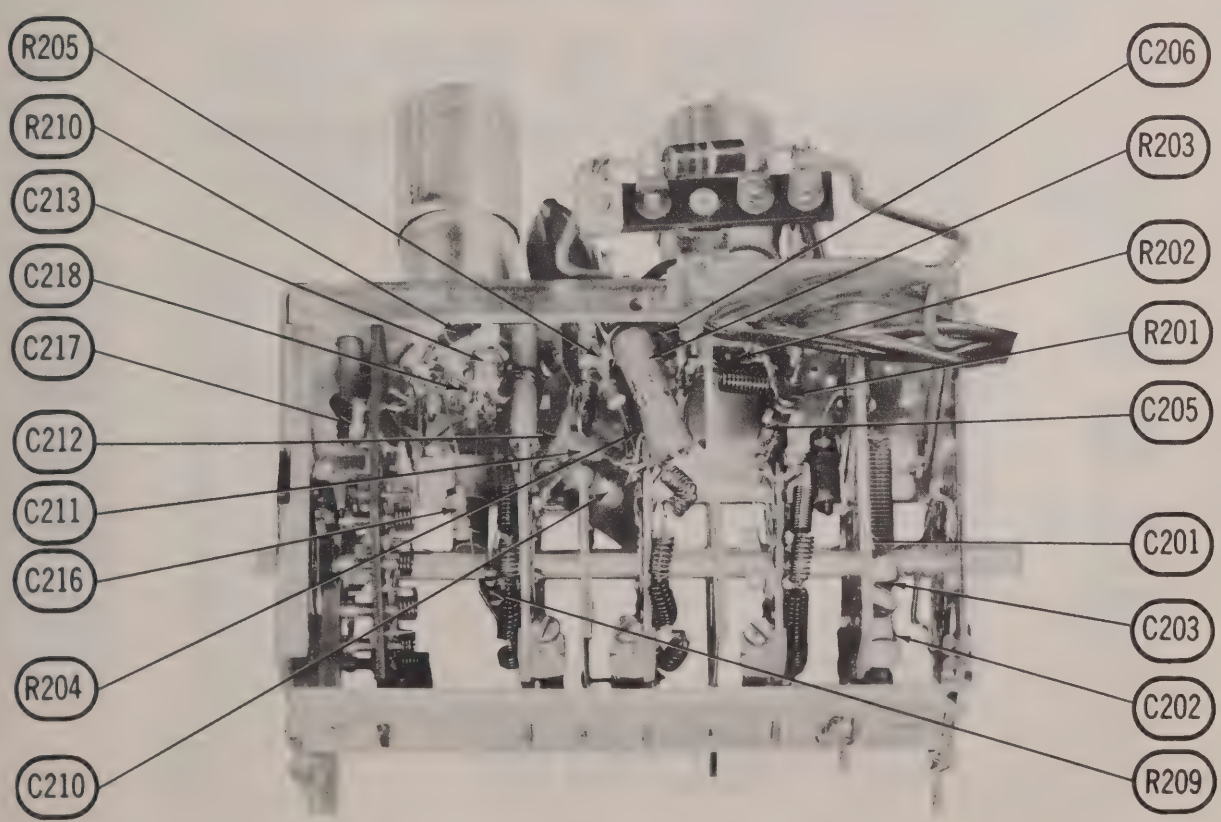
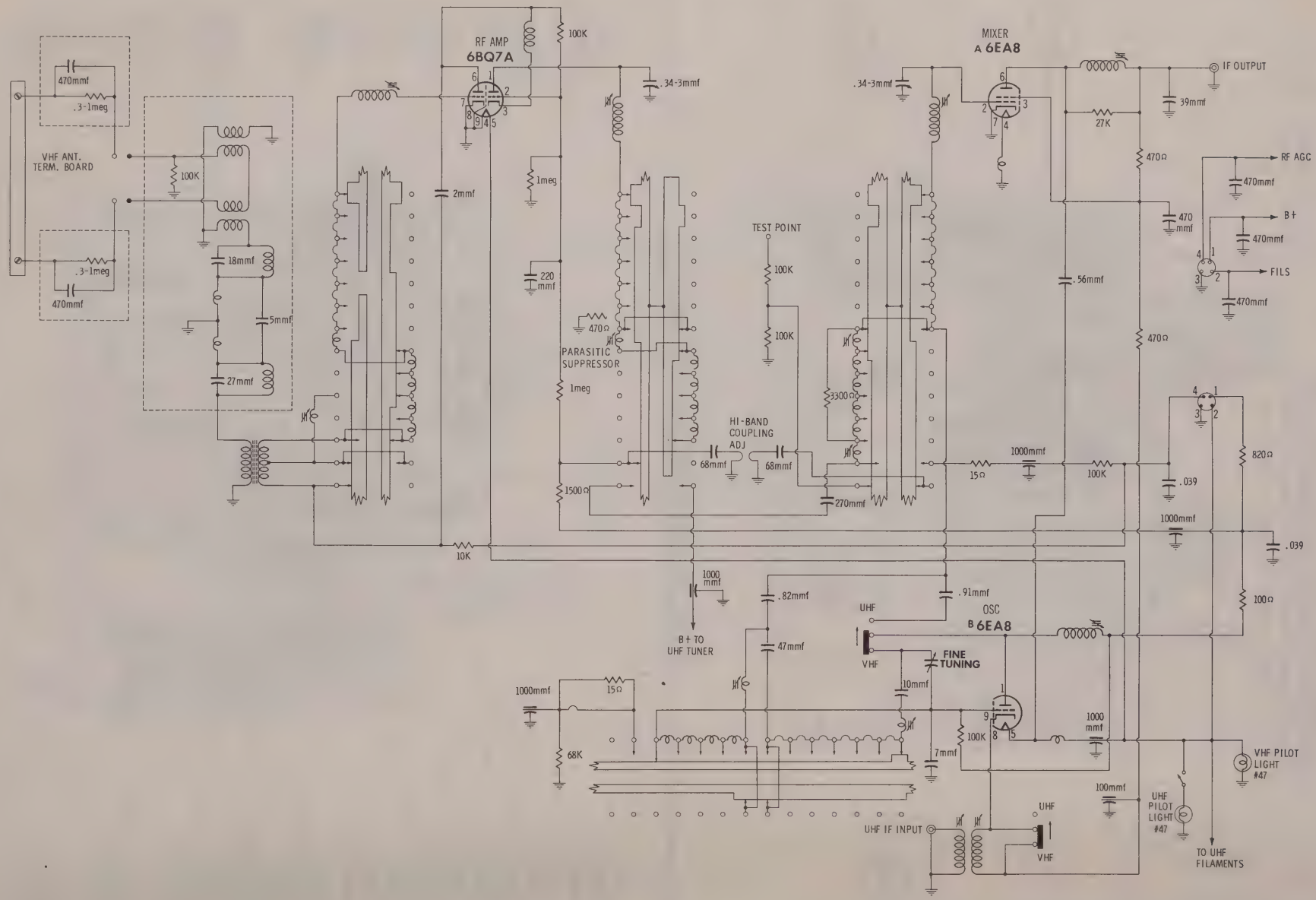


TUNER KRK72N - LEFT SIDE



TUNER KRK72N - RIGHT SIDE



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER with UHF provisions KRK73N, R

CircuiTrace Numbers 1 thru 29

MAIN PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

CircuiTrace Numbers 30 thru 51

SWEEP
PRINTED BOARD

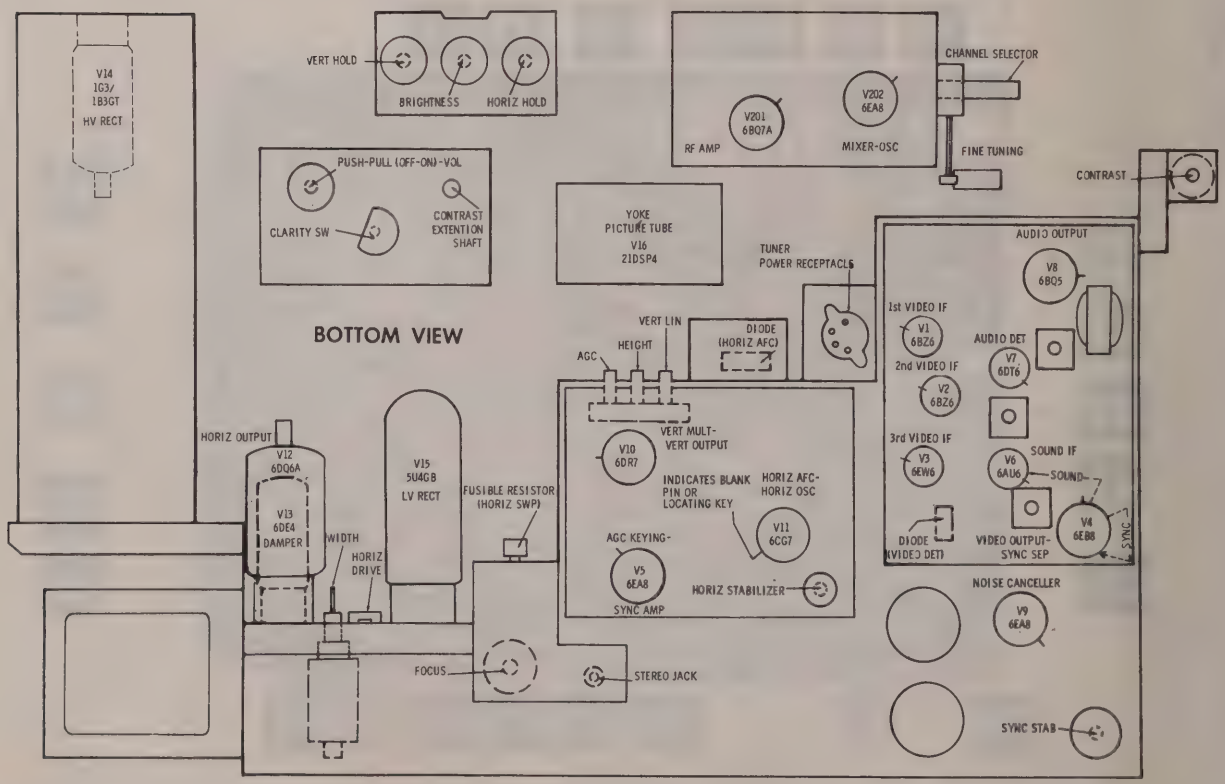
A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

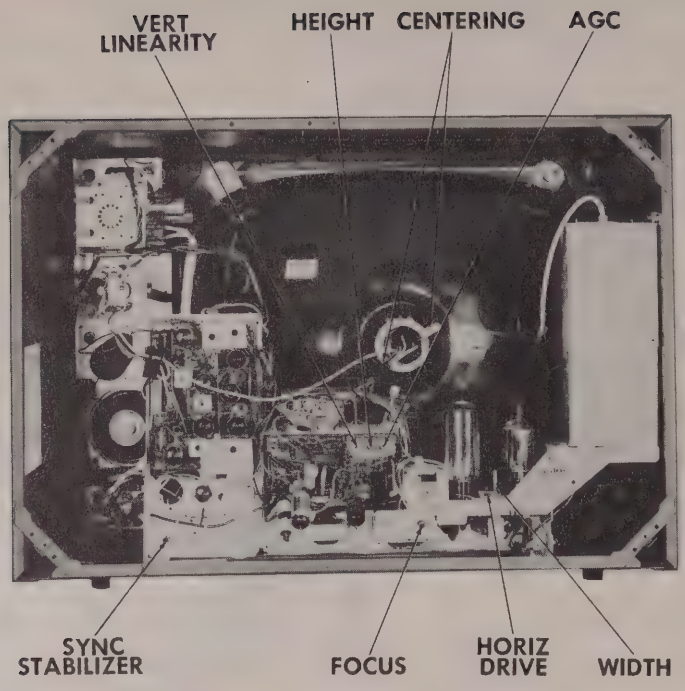
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	120K	1200Ω	0Ω	.1Ω	▲ 220Ω	▲ 220Ω	0Ω		
V2	6BZ6	▲ 15K	▲ 33Ω	0Ω	.1Ω	† 220Ω	† 220Ω	100K		
V3	6EW6	.4Ω	125Ω	.1Ω	0Ω	† 4400Ω	† 4400Ω	0Ω		
V4	6EB8	0Ω	4.9meg	† 2.2meg	.1Ω	0Ω	47Ω	4200Ω	† 18K	† 7000Ω
V5	6EA8	† 21K	● 50K	† 0Ω	.1Ω	0Ω	520K	6100Ω	0Ω	† 1.1meg
V6	6AU6	47K	0Ω	.1Ω	0Ω	† 8300Ω	† 8300Ω	82Ω		
V7	6DT6	4Ω	560Ω	0Ω	.1Ω	† 560K	† 11K	470K		
V8	6BQ5	0Ω	0Ω	220Ω	0Ω	.1Ω	NC	† 2500Ω	NC	† 2200Ω
V9	6EA8	† 13K	● 1.3meg	† 22K	0Ω	.1Ω	† 120K	720Ω	† 6100Ω	† 420K
V10	6DR7	† 270Ω	● 1.6meg	● 1.6meg	0Ω	.1Ω	● † 3.5meg	● 2.5meg	0Ω	330Ω
V11	6CG7	† 0Ω	2.2meg	2200Ω	0Ω	.1Ω	† 83K	● 70K	70Ω	0Ω
V12	6DQ6A	TP	0Ω	NC	† 8200Ω	1meg	NC	.1Ω	100Ω	TOP CAP † 16Ω
V13	6DE4	NC	NC	¶ 4meg	NC	† 2Ω	NC	.1Ω	0Ω	
V14	1G3GT/ 1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP † 495Ω
V15	5U4GB	NC	¶	NC	22Ω	NC	20Ω	NC	¶	
V16	21DSP4	0Ω	330Ω	Pin 6 ● † 1meg	Pin 10 † 100K	Pin 11 ● 150Ω	Pin 12 .1Ω			
V201	6BQ7A	† 2300Ω	550K	650K	0Ω	.1Ω	650K	2.5meg	0Ω	0Ω
V202	6EA8	† 820Ω	100K	▲ 1000Ω	0Ω	.1Ω	1500Ω	0Ω	INF	▲ 5600Ω
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 275V SOURCE.
† MEASURED FROM PIN 3 OF V13.
▲ MEASURED FROM PIN 7 OF V2.
▲ MEASURED FROM PIN 8 OF V202.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

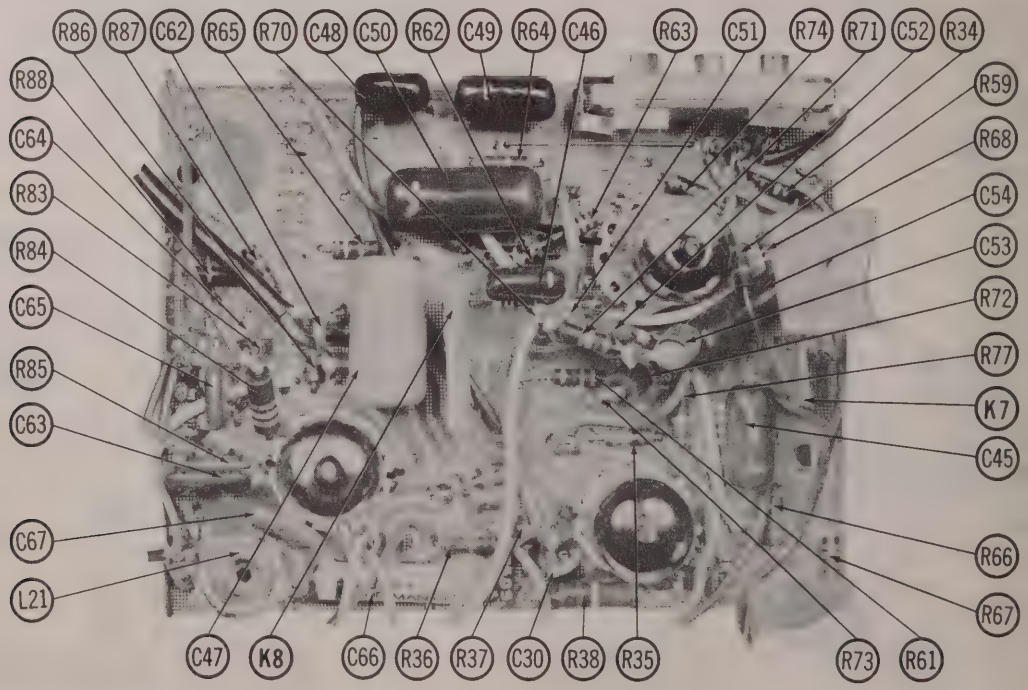


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Before adjusting the Stabilizing slug (B1), the Horizontal Drive and Width must be properly adjusted.

Set the Horizontal Hold control to the pull-in point. Turn the Width slug (B2) fully counterclockwise and turn Horizontal Drive Trimmer (B3) counterclockwise until a bright vertical line appears near the center of the raster, then turn clockwise until the line just disappears. If no line appears, leave B3 fully counterclockwise. With the Brightness control set to normal level, adjust the Width slug (B2) for an overscan of approximately 3/4" on each side of the screen at normal line voltage. Connect a short jumper across the terminals of the Horizontal Stabilizer coil and short the grid (pin 2) of the Horizontal Oscillator to the chassis with a small screwdriver. Adjust the Horizontal Hold control for an upright picture (may appear to float back and forth across the screen). Remove the jumper from across Stabilizer coil, and adjust B1 to again obtain a picture in an upright position. When B1 is properly adjusted, alternately shorting and removing short should not cause the picture to lose sync but instead cause a slight sideways shift of the picture. Remove the short from the grid of the Horizontal Oscillator.



SWEEP PRINTED BOARD

PHOTOFACT* Folder

BELL SOUND
MODEL 6060

BELL SOUND
MODEL 6060

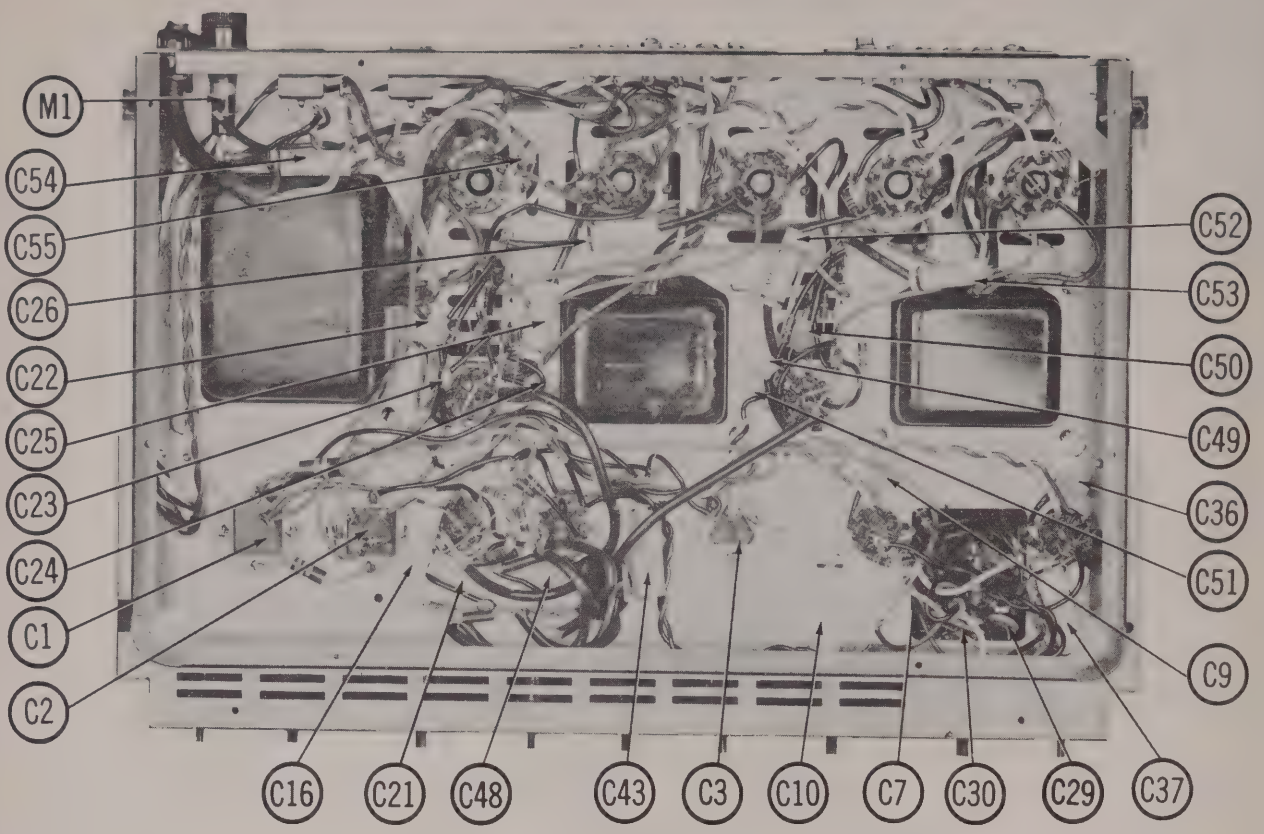
BELL SOUND
MODEL 6060

TRADE NAME	Bell Sound Model 6060
MANUFACTURER	Bell Sound Div., Thompson Ramo Wooldridge Inc., 555 Marion Road, Columbus, Ohio
TYPE SET	AC Operated 11 Tube Stereo Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 230 Watts, 2.2 Amp. @ 117 Volts AC

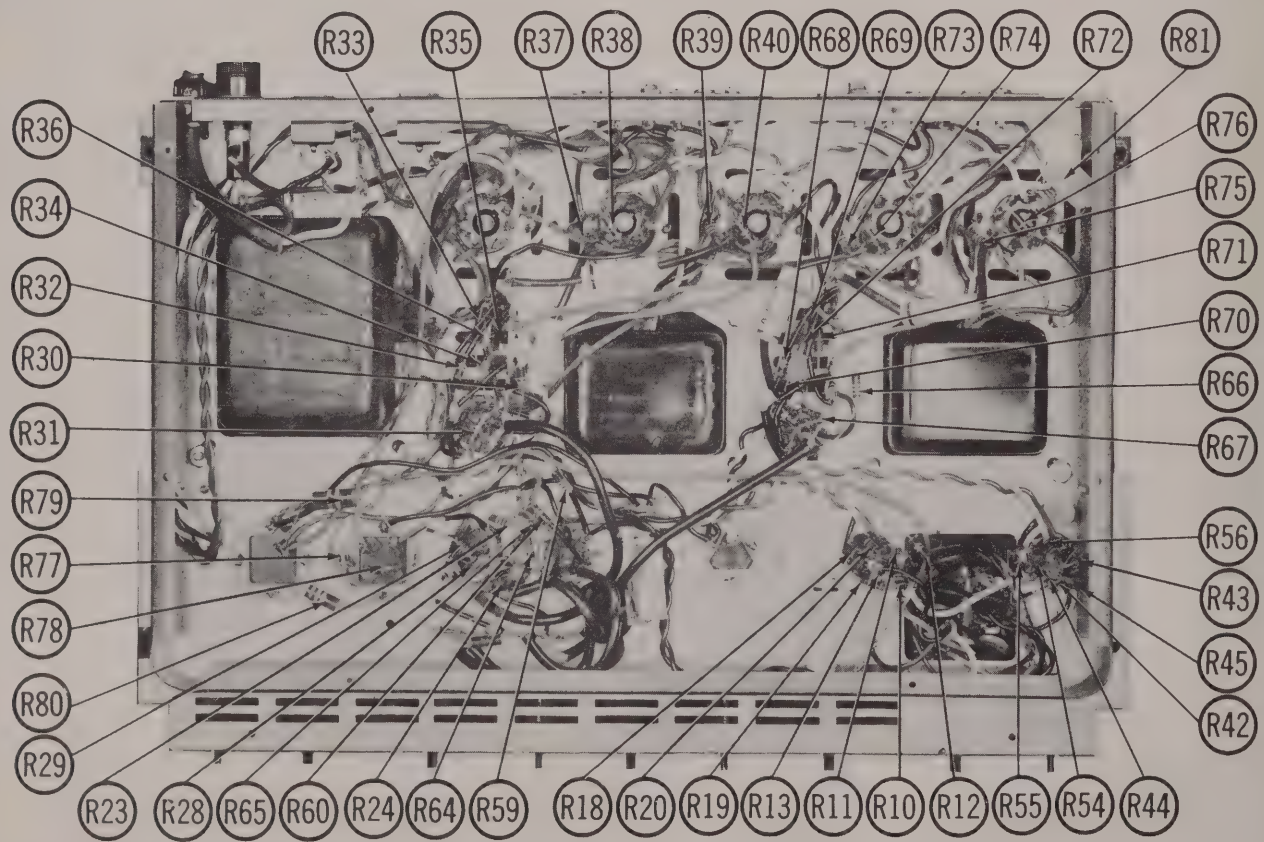
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

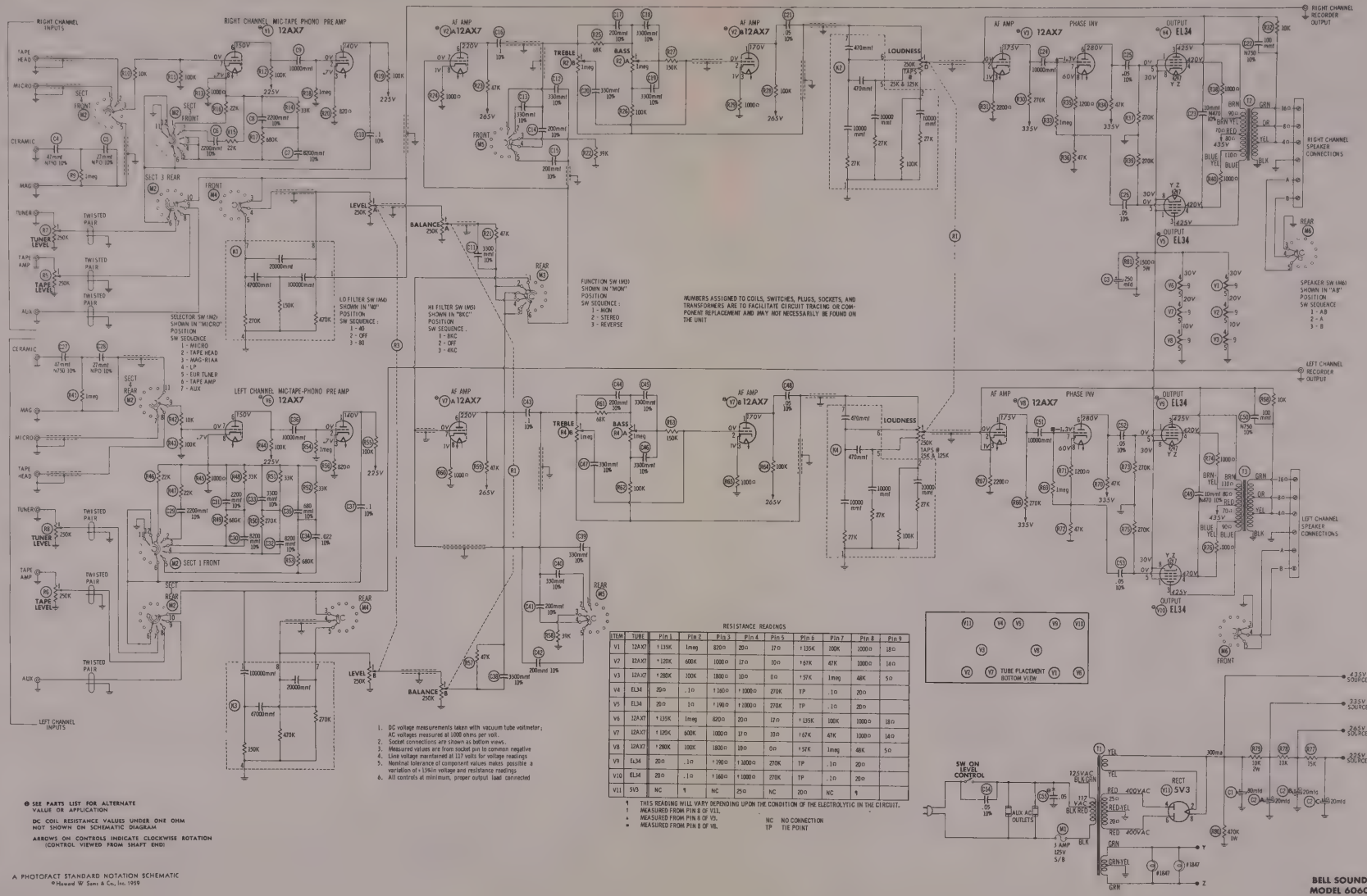
JV313



CHASSIS BOTTOM VIEW — CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW — RESISTOR IDENT.


RIGHT CHANNEL MIC-TAPE PHONO PREAMP
12AX7
LEFT CHANNEL MIC-TAPE-PHONO PREAMP
12AX7
AF AMP
12AX7
PHASE INV
OUTPUT
EL34
TREBLE
BASS
LOUDNESS
RIGHT CHANNEL RECORDER OUTPUT
LEFT CHANNEL RECORDER OUTPUT
RIGHT CHANNEL SPEAKER CONNECTIONS
LEFT CHANNEL SPEAKER CONNECTIONS
SPEAKER SW (M6) SHOWN IN "AB" POSITION SW SEQUENCE 1 - AB 2 - A 3 - B
FUNCTION SW (M3) SHOWN IN "MON" POSITION SW SEQUENCE : 1 - MON 2 - STEREO 3 - REVERSE
HI FILTER SW (M5) SHOWN IN "8KC" POSITION SW SEQUENCE . 1 - 8KC 2 - OFF 3 - 4KC
LO FILTER SW (M4) SHOWN IN "40" POSITION SW SEQUENCE : 1 - 40 2 - OFF 3 - 80
SELECTOR SW (M2) SHOWN IN "MICRO" POSITION SW SEQUENCE 1 - MICRO 2 - TAPE HEAD 3 - MAG-RIAA 4 - LP 5 - EUR TUNER 6 - TAPE AMP 7 - AUX
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
RIGHT CHANNEL INPUTS
LEFT CHANNEL INPUTS
TUNER LEVEL
TAPE LEVEL
LEVEL A 250K
LEVEL B 250K
BALANCE 250K
TWISTED PAIR
SECT 3 REAR
SECT 1 FRONT
SECT 1 REAR
SECT FRONT
SECT REAR
FRONT
REAR
TUBE PLACEMENT BOTTOM VIEW
V11 V4 V5 V9 V10
V3 V8
V2 V7 V1 V6
5W ON LEVEL CONTROL
AUX AC OUTLETS
3 AMP 125V S/B
RECT V11 5V3
435V SOURCE
335V SOURCE
265V SOURCE
225V SOURCE

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	↑135K	1meg	820Ω	20Ω	1Ω	↑135K	100K	1000Ω	18Ω
V2	12AX7	↑120K	600K	1000Ω	1Ω	1Ω	↑67K	47K	1000Ω	14Ω
V3	12AX7	↑280K	100K	1800Ω	1Ω	0Ω	↑57K	1meg	48K	5Ω
V4	EL34	2Ω	.1Ω	↑16Ω	↑1000Ω	270K	TP	.1Ω	2Ω	
V5	EL34	2Ω	1Ω	↑19Ω	↑1000Ω	270K	TP	.1Ω	2Ω	
V6	12AX7	↑135K	1meg	820Ω	20Ω	1Ω	↑135K	100K	1000Ω	18Ω
V7	12AX7	↑125K	600K	1000Ω	1Ω	1Ω	↑67K	47K	1000Ω	14Ω
V8	12AX7	↑280K	100K	1800Ω	1Ω	0Ω	↑57K	1meg	48K	5Ω
V9	EL34	2Ω	.1Ω	↑19Ω	↑1000Ω	270K	TP	.1Ω	2Ω	
V10	EL34	2Ω	.1Ω	↑16Ω	↑1000Ω	270K	TP	.1Ω	2Ω	
V11	5V3	NC	¶	NC	25Ω	NC	2Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
* MEASURED FROM PIN 8 OF V11.
▲ MEASURED FROM PIN 8 OF V3.
■ MEASURED FROM PIN 8 OF V8.

NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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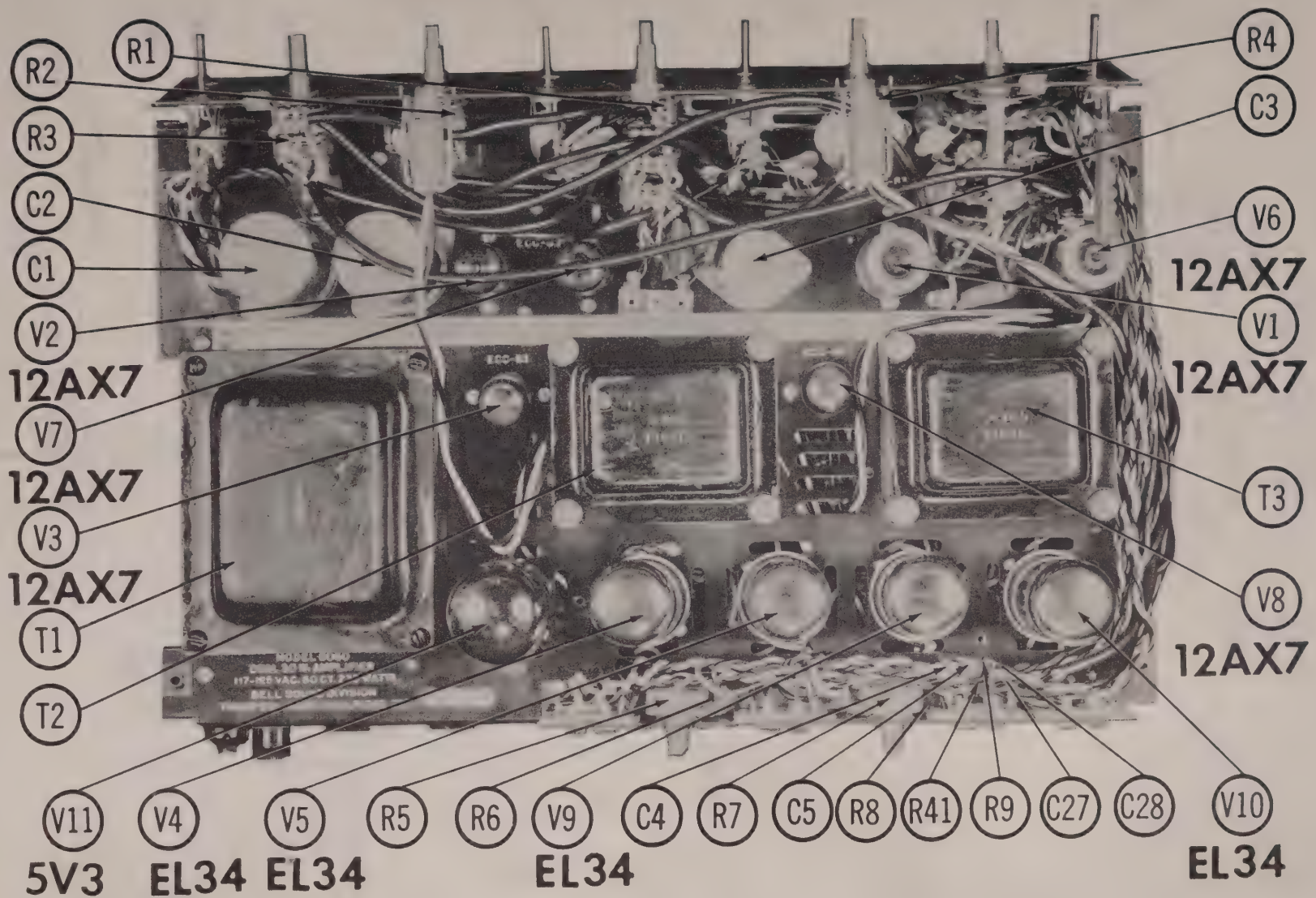
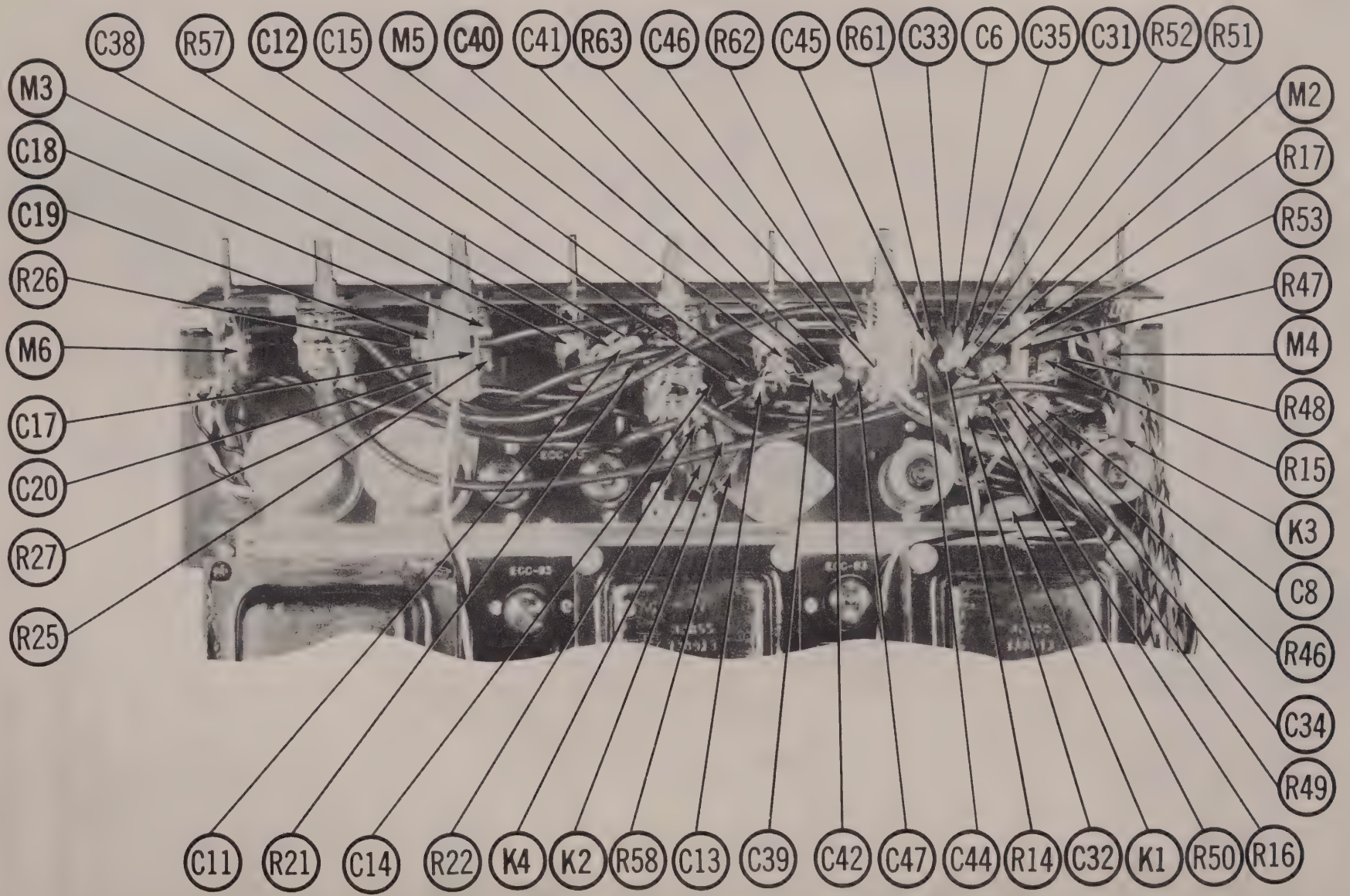
BELL SOUND MODEL 6060



CHASSIS-TOP VIEW

BELL SOUND
MODEL 6060



CHASSIS TOP VIEW — CONTROL PANEL REAR

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE		ITEM No.	USE	TYPE	
V1	Right Channel Mic-Tape-Phono Preamp.	12AX7	ECC83*	V6	Left Channel Mic-Tape-Phono Preamp.	12AX7	ECC83*
V2	Right Channel AF Amp.	12AX7	ECC83*	V7	Left Channel AF Amp.	12AX7	ECC83*
V3	Right Channel AF Amp. - Right Channel Phase Inv.	12AX7	ECC83*	V8	Left Channel AF Amp. - Left Channel Phase Inv.	12AX7	ECC83*
V4	Right Channel Output	EL34	6CA7*	V9	Left Channel Output	EL34	6CA7*
V5	Right Channel Output	EL34	6CA7*	V10	Left Channel Output	EL34	6CA7*
				V11	Rectifier	5V3	

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BELL SOUND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	80	500	23B40	AFH1-62	A0560	FP187	TMS-70	TVL-1958	
C2A	▲20	450	23B11	AFH3-36	C0270	FP376.5	TMT-34	TVL-3780	
B	■20	450							
C	▲20	450							
C3	250	50	23B42	AFHS1-24-24		FP117 TC3501	TMS-14	TVL-1324	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA BELL SOUND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	47		N750 10%	24B55	N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47S 10%*	
C5	27		NPO 10%	24B72		TCZ-27	C10Q27C	CNO-427	5TCC-Q27S 10%*	
C6	2200		10%	24B17	DI-2200			JL-222	5GA-D22S 10%*	
C7	8200		10%	24B57					5GA-D82S 10%*	
C8	2200		10%	24B17	DI-2200			JL-222	5GA-D22S 10%*	
C9	10000			24B61	DI-10000	MD-103	BYA10S1	B-110	5HK-S1	
C10	.1	400	10%	28B6	V84C4P1		PM4P1	GTM-401	4TM-P1	
C11	3300		10%	24B22	DI-3300			JL-233	5GA-D33S 10%*	
C12	330		10%	24B75	DI-330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C13	330		10%	24B75	DI-330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C14	200		10%	24B76	DI-200	MD-201	L10T2		5GA-T2S 10% *	
C15	200		10%	24B76	DI-200	MD-201	L10T2		5GA-T2S 10% *	
C16	.1	400	10%	28B6	V84C4P1		PM4P1	GTM-4P1	4TM-P1	
C17	200		10%	24B76	DI-200	MD-201	L10T2		5GA-T2S 10% *	
C18	3300		10%	24B22	DI-3300			JL-233	5GA-D33S 10%*	
C19	3300		10%	24B22	DI-3300			JL-233	5GA-D33S 10%*	
C20	330		10%	24B75	DI-330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C21	.05	400	10%	28B4	V84C4S47		PM4S5	GTM-4147	4TM-S5	

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA BELL SOUND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C22	100		N750 10%	24B20	N750-DI 100	DTN-100	C10T1U	CN7-310	5TCU-T1S 10%*	
C23	10		N470 10%	24B71						
C24	10000			24B61	DI-10000	MD-103	BYA10S1	B-110	5HK-S1	
C25	.05	400	10%	28B4	V84C4S47		PM4S5	GTM-4147	4TM-S5	
C26	.05	400	10%	28B4	V84C4S47		PM4S5	GTM-4147	4TM-S5	
C27	47		N750 10%	24B55	N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47S 10%*	
C28	27		NPO 10%	24B72		TCZ-27	C10Q27C	CNO-427	5TCC-Q27S 10%*	
C29	2200		10%	24B17	DI-2200			JL-222	5GA-D22S 10%*	
C30	8200		10%	24B57					5GA-D82S 10%*	
C31	2200		10%	24B17	DI-2200			JL-222	5GA-D22S 10%*	
C32	8200		10%	24B57					5GA-D82S 10%*	
C33	3300		10%	24B22	DI-3300			JL-233	5GA-D33S 10%*	
C34	.022	50	10%	28B7	V84C2S22		PM4S22	GTM-1122	2TM-S22	
C35	680		10%	24B56	DI-680	MD-681		JL-368	5GA-T68S 10%*	
C36	10000			24B61	DI-10000	MD-103	BYA10S1	B-110	5HK-S1	
C37	.1	400	10%	28B6	V84C4P1		PM4P1	GTM-401	4TM-P1	
C38	3300		10%	24B22	DI-3300			JL-233	5GA-D33S 10%*	
C39	330		10%	24B75	DI-330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C40	330		10%	24B75	DI-330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C41	200		10%	24B76	DI-200	MD-201	L10T2		5GA-T2S 10% *	
C42	200		10%	24B76	DI-200	MD-201	L10T2		5GA-T2S 10% *	
C43	.1	400	10%	28B6	V84C4P1		PM4P1	GTM-401	4TM-P1	
C44	200		10%	24B76	DI-200	MD-201	L10T2		5GA-T2S 10% *	
C45	3300		10%	24B22	DI-3300			JL-233	5GA-D33S 10%*	
C46	3300		10%	24B22	DI-3300			JL-233	5GA-D33S 10%*	
C47	330		10%	24B75	DI-330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C48	.05	400	10%	28B4	V84C4S47		PM4S5	5GTM-4147	4TM-S5	
C49	10		N470 10%	24B71						
C50	100		N750 10%	24B20	N750-DI 100	DTN-100	C10T1U	CN7-T1	5TCU-T1S 10%*	
C51	10000			24B61	DI-10000	MD-103	BYA10S1	B-110	5HK-S1	
C52	.05	400	10%	28B4	V84C4S47		PM4S5	GTM-4147	4TM-S5	
C53	.05	400	10%	28B4	V84C4S47		PM4S5	GTM-4147	4TM-S5	
C54	.05	400	10%	28B4	V84C4S47		PM4S5	GTM-4147	4TM-S5	
C55	.05	400			P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	①

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BELL SOUND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250K	2	15B42					Balance, Right Channel
B	250K							Balance, Left Channel
C	250K *							Loudness, Left Channel
D	250K *							Loudness, Right Channel
R2A	1meg	2	15B33	F1-51		■ QJ-1111R	† UE4031	Bass, Right Channel
B	1meg			R2-51				Treble, Right Channel
R3A	250K	2	15B43					Level, Right Channel
B	250K							Level, Left Channel
C	Switch							Push Pull, Off-On
R4A	1meg	2	15B33	F1-51		■ QJ-1111R	† UE4031	Bass, Left Channel
B	1meg			R2-51				Treble, Left Channel
R5A	250K	2	15B47	AB-51	A47-250K-Z	BI2-130	U44	Tape Level, Right Channel
B	Shaft			AK-1	FKS-1/4	SK2	Not Req.	
R6A	250K	2	15B47	AB-51	A47-250K-Z	BI3-130	U44	Tape Level, Left Channel
B	Shaft			AK-1	FKS-1/4	SK2	Not Req.	
R7A	250K	2	15B47	AB-51	A47-250K-Z	BI3-130	U44	Tuner Level, Right Channel
B	Shaft			AK-1	FKS-1/4	SK2	Not Req.	
R8A	250K	2	15B47	AB-51	A47-250K-Z	BI3-130	U44	Tuner Level, Left Channel
B	Shaft			AK-1	FKS-1/4	SK2	Not Req.	

† "STA-LOC" equivalent: FA16L, RU16L, OS750A, IS1062
* Taps ② 25K and 125K.
■ "Concentrikit" Equivalent: K-2 Kit with base elements and shafts: BI1-137, P1-024 (Panel)
Not available as a factory assembled unit. BI1-137, R1-103 (Rear)

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R9	1meg	
R10	10K	
R11	100K	
R12	100K	
R13	1000Ω	
R14	33K	
R15	22K	
R16	22K	
R17	680K	
R18	1meg	
R19	100K	
R20	820Ω	
R21	47K	
R22	39K	
R23	47K	
R24	1000Ω	
R25	68K	
R26	100K	
R27	150K	
R28	100K	
R29	1000Ω	
R30	270K	
R31	2200Ω	
R32	10K	
R33	1meg	

ITEM No.	RATING	REMARKS
R34	47K	
R35	1200Ω	
R36	47K	
R37	270K	
R38	1000Ω	
R39	270K	
R40	1000Ω	
R41	1meg	
R42	10K	
R43	100K	
R44	100K	
R45	1000Ω	
R46	22K	
R47	22K	
R48	33K	
R49	680K	
R50	270K	
R51	33K	
R52	33K	
R53	680K	
R54	1meg	
R55	100K	
R56	820Ω	
R57	47K	
R58	39K	

ITEM No.	RATING	REMARKS
R59	47K	
R60	1000Ω	
R61	68K	
R62	100K	
R63	150K	
R64	100K	
R65	1000Ω	
R66	270K	
R67	2200Ω	
R68	10K	
R69	1meg	
R70	47K	
R71	1200Ω	
R72	47K	
R73	270K	
R74	1000Ω	
R75	270K	
R76	1000Ω	
R77	15K	
R78	10K	
R79	10K 2W	
R80	470K 1W	
R81	1500Ω 5W	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: BELL SOUND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5000Ω CT Screen Taps ② 1200Ω CT	16Ω Taps ② 8Ω, 4Ω	32B55							
T3	5000Ω CT Screen Taps ② 1200Ω CT	16Ω Taps ② 8Ω, 4Ω	32B55							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: BELL SOUND PART No. FUSE	BELL SOUND PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A 125V S/B	53A7	53B5	312003. (3AG 3A 125V S/B)	342001	MDX-3	HKP

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BELL SOUND PART No.	REPLACEMENT DATA
K1	Preamp. Tone Comp. Right Channel	20000mmf, 47000mmf, 100000mmf, 150K, 270K, 470K	91A200	
K2	Loudness Control Tone Comp. -Right Channel	470mmf, 470mmf, 10000mmf, 10000mmf, 10000mmf, 27K, 27K, 27K, 100K	91A198	
K3	Preamp. Tone Comp. Left Channel	20000mmf, 47000mmf, 100000mmf, 150K, 270K, 470K	91A200	
K4	Loudness Control Tone Comp. -Left Channel	470mmf, 470mmf, 10000mmf, 10000mmf, 10000mmf, 27K, 27K, 27K, 100K	91A198	

MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
M2	Switch	43B39	Selector (Rotary Wafer Type)
M3	Switch	43B42	Function (DPTT Lever Type)
M4	Switch	43B47	Lo Filter (DPTT Lever Type)
M5	Switch	43B46	Hi Filter (DPTT Lever Type)
M6	Switch	43B41	Speaker (DPTT Lever Type)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	REPLACEMENT DATA: BELL SOUND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	125V Tap ② 117V ② 2.2A	800VCT ② .300A	5V ② 3.8A	6.3VCT ② 6.3A			32B43						R-24B ①

① 117VAC Primary only.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

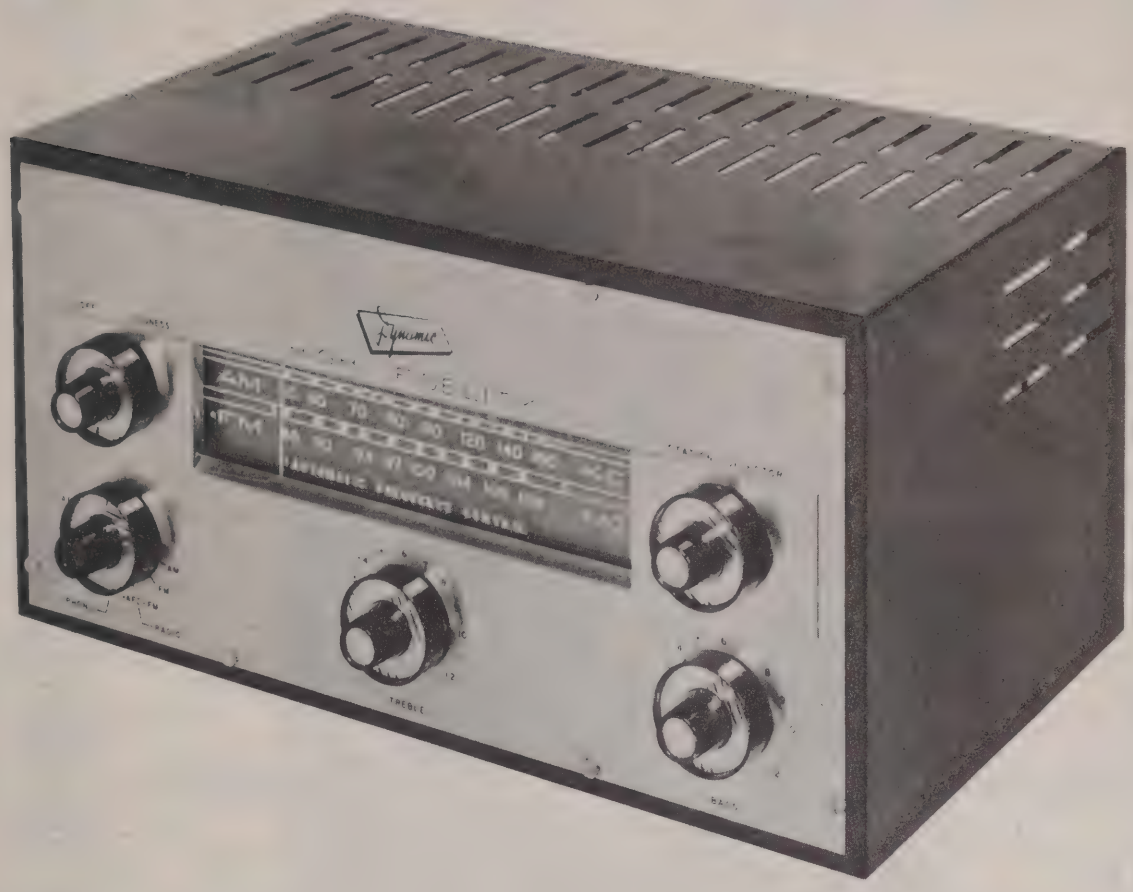
NAME	PART NO.	DESCRIPTION
Knob	84A28	Large Inner Concentric
Knob	84A27	Small Outer Concentric
Knob	84A26	Integral
Knob	84A29	Push-On, Lever
Front Panel	94C28	

PHOTOFACT* Folder

EIA

DYNAMIC MODEL AF250PA

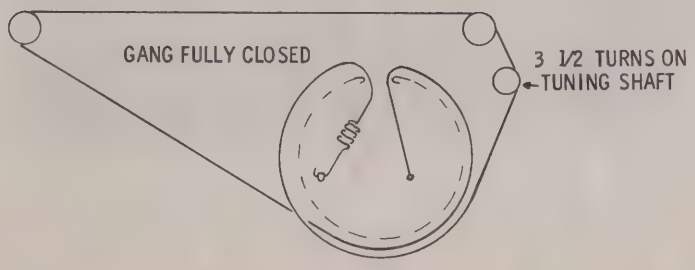
DYNAMIC MODEL AF250PA



DYNAMIC MODEL AF250PA

TRADE NAME	Dynamic Model AF250PA		
MANUFACTURER	Dynamic Electronics - N. Y., Inc., 87-46 123rd Street, Richmond Hill, L. I., N. Y.		
TYPE SET	AC Operated 12 Tube FM-AM Receiver		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	96 Watts, .95 Amp. @117 Volts AC (FM)
TUNING RANGE—BROADCAST	540 — 1650KC	FREQ. MOD.	88 — 108MC

DIAL CORD STRINGING



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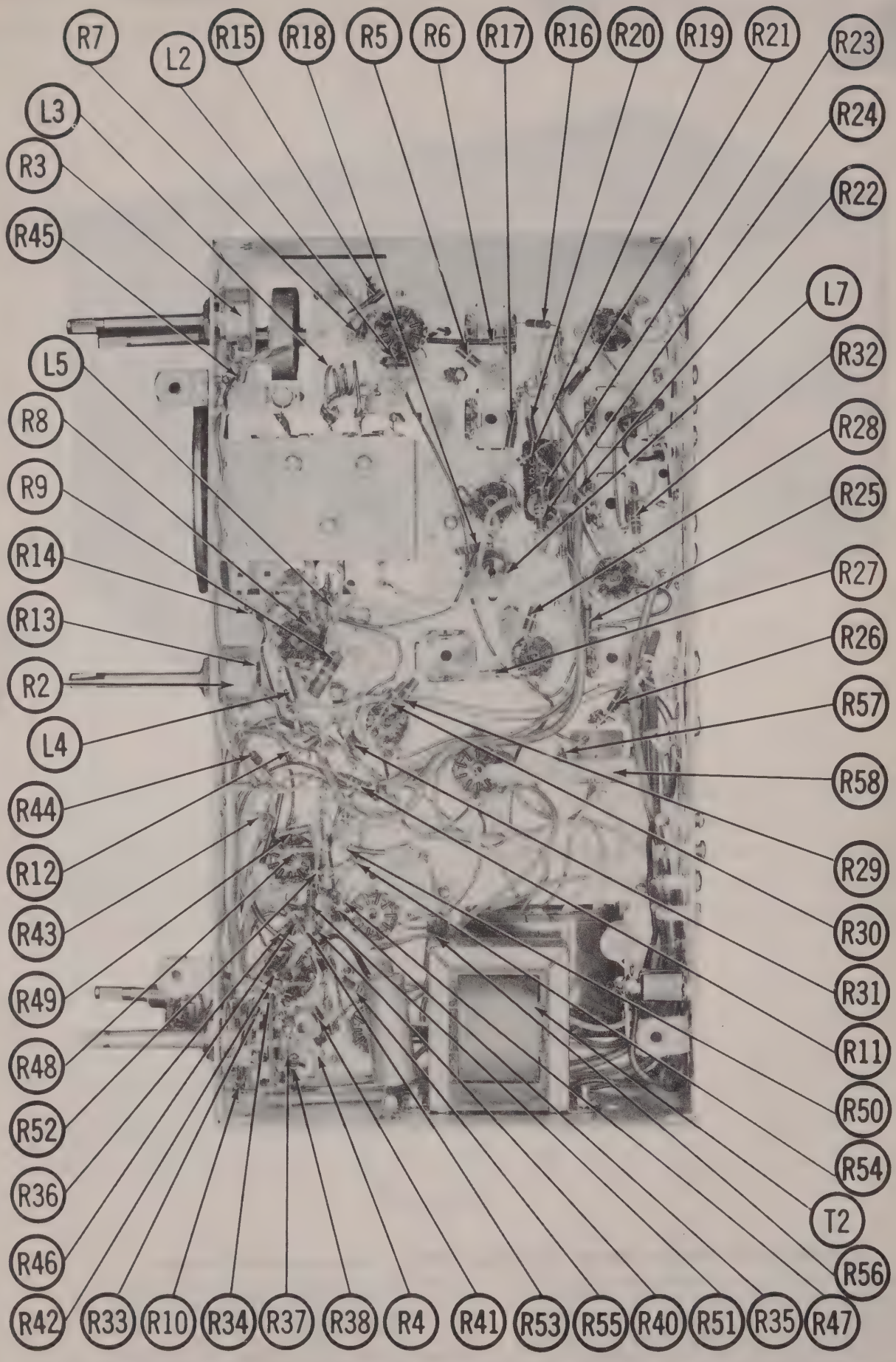
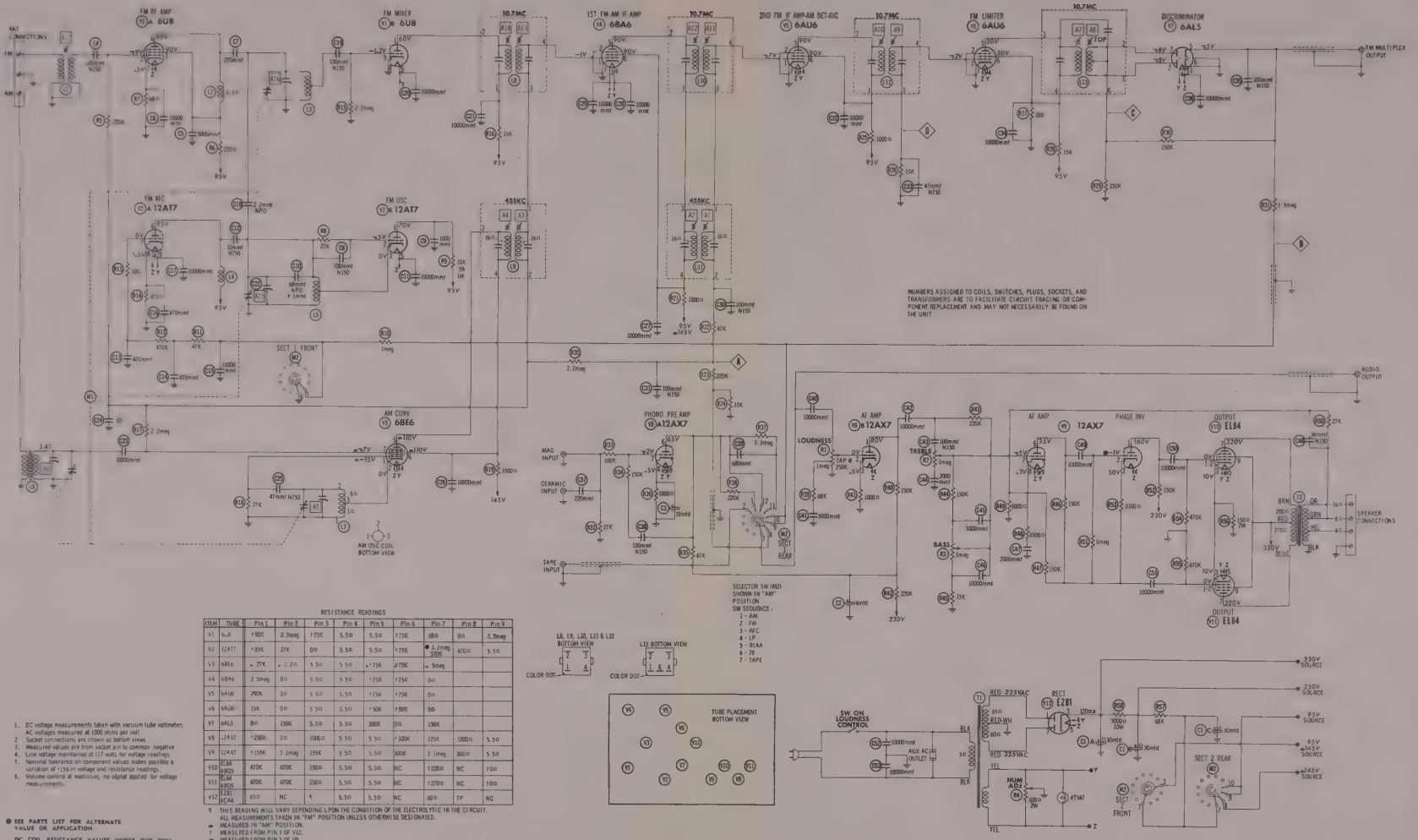


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6u8	†90K	2.3meg	†73K	5.5Ω	5.5Ω	†73K	68Ω	0Ω	2.3meg
V2	12AT7	†83K	27K	0Ω	5.5Ω	5.5Ω	†73K	● 3.2meg 520K	470Ω	5.5Ω
V3	6BE6	▲ 27K	▲ 120	5.5Ω	5.5Ω	▲†75K	▲75K	▲ 5meg		
V4	6BA6	2.5meg	0Ω	5.5Ω	5.5Ω	†75K	†75K	0Ω		
V5	6AU6	290K	0Ω	5.5Ω	5.5Ω	†75K	†75K	0Ω		
V6	6AU6	15K	0Ω	5.5Ω	5.5Ω	†50K	†50K	0Ω		
V7	6AL5	0Ω	150K	5.5Ω	5.5Ω	300K	0Ω	150K		
V8	12AX7	†250K	0Ω	100Ω	5.5Ω	5.5Ω	†300K	125K	100Ω	5.5Ω
V9	12AX7	†155K	1.1meg	155K	5.5Ω	5.5Ω	300K	1.1meg	800Ω	5.5Ω
V10	EL84 6BQ5	470K	470K	190Ω	5.5Ω	5.5Ω	NC	†220Ω	NC	†0Ω
V11	EL84 6BQ5	470K	470K	150Ω	5.5Ω	5.5Ω	NC	†270Ω	NC	†0Ω
V12	EZ81 6CA4	65Ω	NC	¶	5.5Ω	5.5Ω	NC	60Ω	TP	NC

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT. ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
▲ MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 3 OF V12.
■ MEASURED FROM PIN 3 OF V9.
● MEASURED IN "FM-AFC" POSITION.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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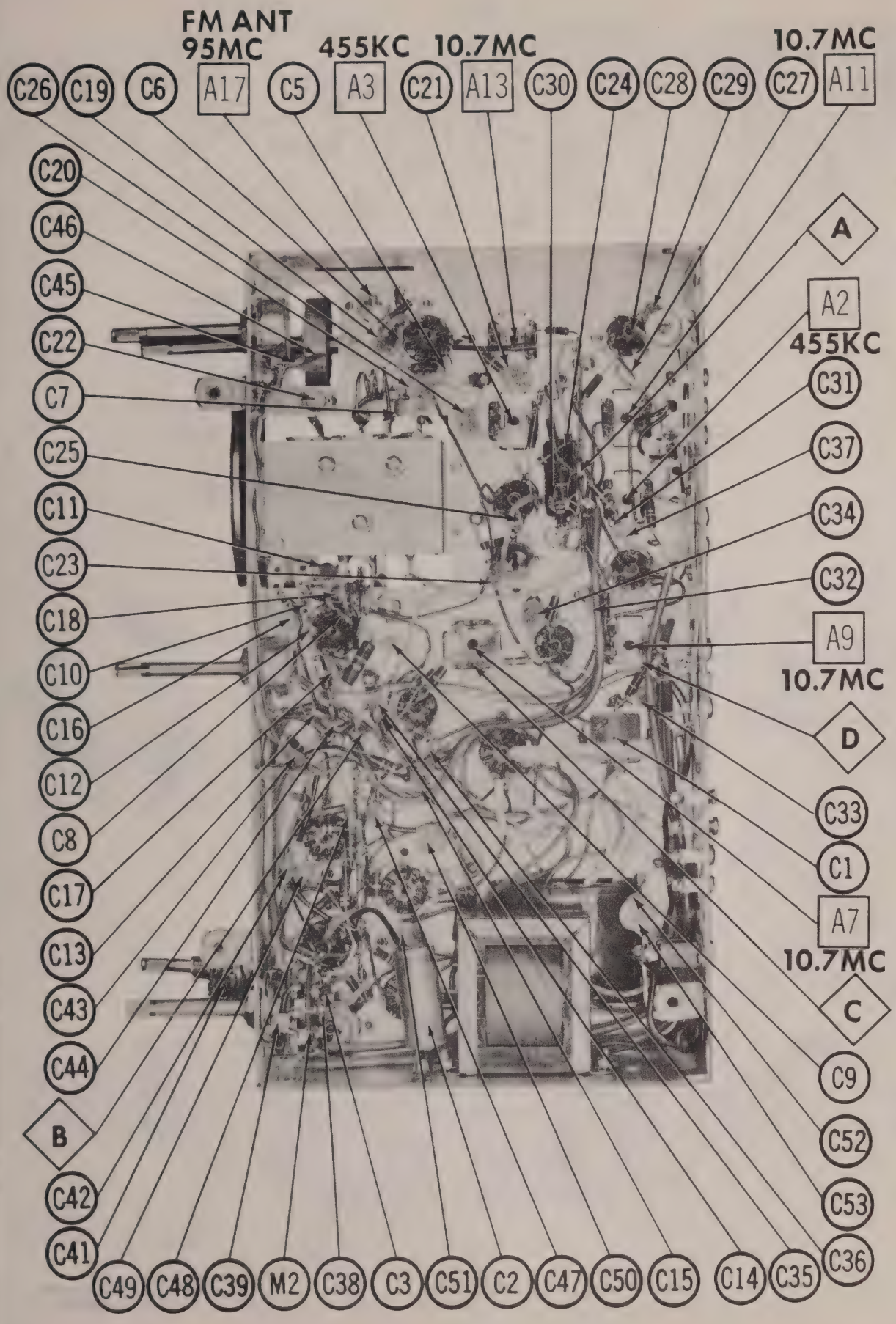
DYNAMIC MODEL AF250PA



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

DYNAMIC
MODEL AF250PA

FOLDER 4

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
- A1 thru A4, A7 thru A14.....GENERAL CEMENT #5097, 8727
  WALSCO #2515
- A15, A17.....GENERAL CEMENT #8721, 8722
  WALSCO #2519
- A5, A6, A16.....GENERAL CEMENT #5004, 5008, 5009
  WALSCO #2520

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	"	1600KC	"	1600KC	"	A5	"
3.	"	High side to AM antenna terminal. Low side to chassis.	1400KC	"	Tune to 1400KC Signal	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	200mmf	High side to pin 1 (grid) of FM Limiter. Low side to Chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point Ⓑ. Common to chassis.	A7	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	High side to pin 9 (grid) of FM Mixer. Low side to chassis.	"	"	"	DC probe to point Ⓓ. Common to chassis.	A9, A10, A11, A12, A13, A14	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	200mmf	High side to pin 1 (grid) of FM Limiter. Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. amp. to point Ⓑ. Low side to chassis.	A7	Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown.
5.	"	"	"	"	"	Vert. amp. to point Ⓒ. Low side to chassis.	A8	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.
6.	"	High side to pin 9 (grid) of FM Mixer. Low side to chassis.	"	"	"	Vert. amp. to point Ⓓ. Low side to chassis.	A9, A10, A11, A12, A13, A14	Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown.

FM RF ALIGNMENT

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	270Ω Carbon Resistor	Across FM antenna terminals with 270Ω in high side.	106MC (Unmod.)	FM	106MC	DC probe to point Ⓑ. Common to chassis.	A15, A16	Adjust for maximum deflection.
8.	"	"	90MC	"	90MC	"	L3, L5	"
9.	"	"	95MC	"	Tune to 95MC Signal	"	A17	"

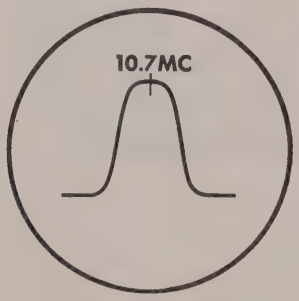


FIG. 1

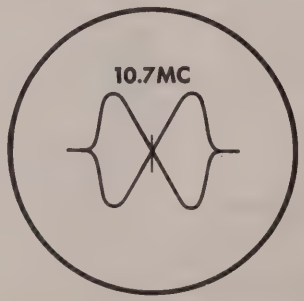


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Mixer	6U8
V2	FM AFC - FM Osc.	12AT7
V3	AM Converter	6BE6
V4	1st FM-AM IF Amplifier	6BA6
V5	2nd FM IF Amplifier-AM Det. - AVC	6AU6
V6	FM Limiter	6AU6
V7	Discriminator	6AL5
V8	Phono Preamp. - AF Amp.	12AX7
V9	AF Amp. - Phase Inv.	12AX7
V10	Output	EL84/6BQ5
V11	Output	EL84/6BQ5
V12	Rectifier	EZ81/6CA4

ELECTROLYTIC CAPACITORS

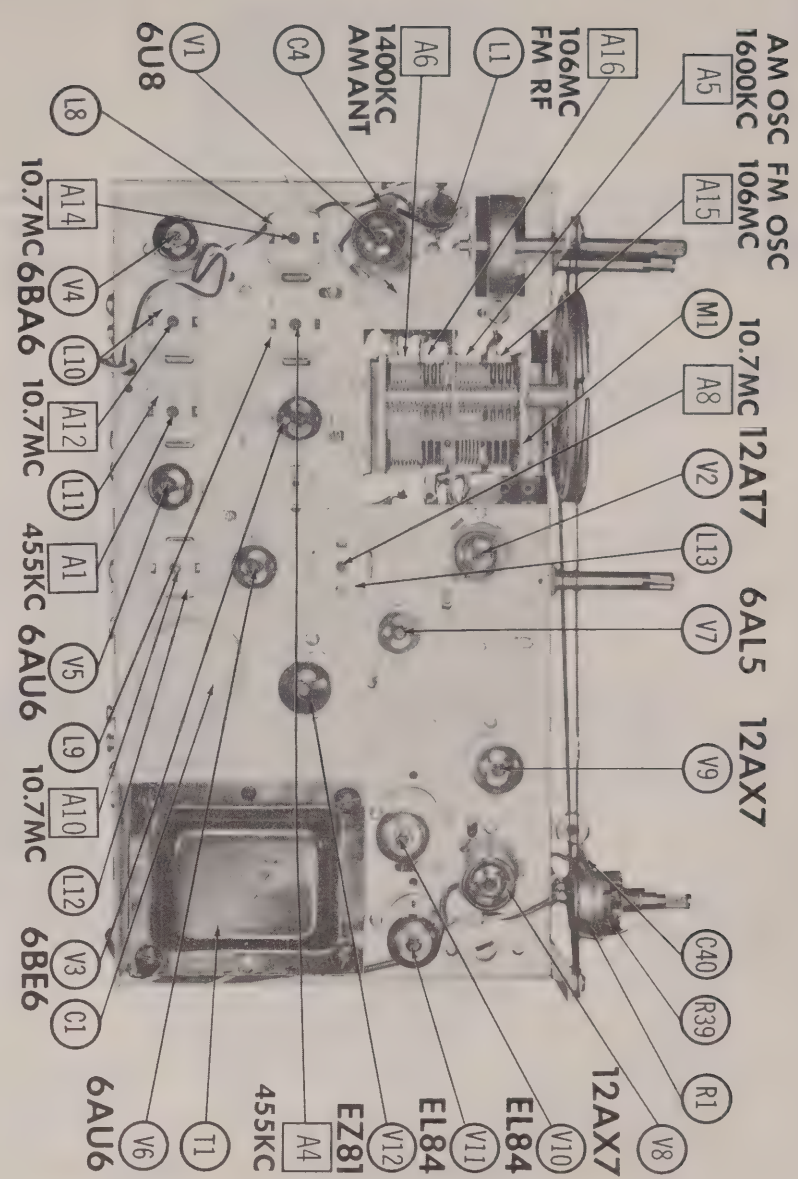
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA DYNAMIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■30	450		AFH3-39	C0300	FP376.7	TMT-35	TVL-3782	
B	▲30	450							
C	▲30	450							
C2	4	400		PRS1710	BR445	TC70	TD-4-450	TVA-1702	
C3	10	6		XPP6010	NLW10-6	TT6X10	ML10-6	TE-1087	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA DYNAMIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	100		N150							
C5	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C6	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	220				BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C8	100		N150							
C9	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C10	68		NPO ± 1mmf			TCZ-68			5TCC-Q68S ±1mmf*	
C11	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C12	10		N750		N750-DI 10	DTN-10	C10Q1U	CN7-410	5TCU-Q1	
C13	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C14	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C15	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C16	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C17	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C18	2.2		NPO		NPO-SI 2.2	TCZ-2R2	C10V22C	CNO-522	5TCCB-V22	
C19	100		N150							
C20	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C21	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C22										
C23	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C24	.05	400			P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C25	47		N750		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCC-Q47	
C26	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C27	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C28	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C29	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C30	100		N150							
C31	100		N150							
C32	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C33	47		N750		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47U	
C34	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C35	100		N150							
C36	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C37	220				BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C38	100		N150							
C39	680				BPD-00068	DD-681	L10T68	B-368	5GA-T68	
C40	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	VOLT	TOL	REPLACEMENT DATA DYNAMIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C41	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C42	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C43	100		N150							
C44	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C45	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C46	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C47	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C48	56		N150							
C49	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C50	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C51	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C52	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C53	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA DYNAMIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	CM22157	BT-73	A47F4-1meg	Q13-137X	UT-440	Loudness, Tap @ 250K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Off-On
R2A	1meg	½	CM22887	B-70	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	1meg	½	CM22887	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4	100Ω	2(WW)	CM21465		39-100	112-100	FL100P	Hum Adjust

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	220K	
R6	220Ω	
R7	68Ω	
R8	27K	
R9	10K 5% 1W	
R10	1meg	
R11	47K	
R12	470K	
R13	100Ω	
R14	470Ω	
R15	2.2meg	
R16	15K	
R17	2.2meg	
R18	27K	
R19	3300Ω	
R20	2.2meg	
R21	1000Ω	
R22	47K	

ITEM No.	RATING	REMARKS
R23	220K	
R24	33K	
R25	1000Ω	
R26	15K	
R27	10K	
R28	15K	
R29	150K	
R30	150K	
R31	1.5meg	
R32	27K	
R33	100K	
R34	150K	
R35	47K	
R36	1000Ω	
R37	3.3meg	
R38	220K	
R39	68K	
R40	150K	

ITEM No.	RATING	REMARKS
R41	1000Ω	
R42	220K	
R43	220K	
R44	150K	
R45	15K	
R46	150K	
R47	150K	
R48	3300Ω	
R49	1000Ω	
R50	27K	
R51	1meg	
R52	150K	
R53	3300Ω	
R54	470K	
R55	470K	
R56	150Ω 2W	
R57	68K	
R58	5000Ω 10W	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA DYNAMIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .95A	570VCT @ .122A	6.3V @ 5.2A	PT-72						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA DYNAMIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6000Ω CT	16Ω Tap @ 8Ω, 4Ω			A-2904	AU-600	A-3852		S-55Z	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA DYNAMIC PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Antenna Trans.							
L2	RF Choke				SW-631			4.7uh
L3	FM RF Coil							
L4	RF Choke							3.4uh
L5	FM Osc. Coil							
L6	Loopstick							
L7	AM Osc. Coil				BC-393			
L8	1st FM IF Trans.		16-3487	16-3487	FM-254	1463		
L9	1st AM IF Trans.		16-6758	16-6758	BC-352	12-C1	RF-1	
L10	2nd FM IF Trans.		16-3487	16-3487	FM-254	1463		
L11	2nd AM IF Trans.		16-6758	16-6758	BC-353	12-C2	RF-2	
L12	3rd FM IF Trans.		16-3487	16-3487	FM-254	1463		
L13	Discriminator		17-3494	17-3494	FM-253	1464		

MISCELLANEOUS

ITEM No.	PART NAME	DYNAMIC PART No.	NOTES
M1	Tuning Cap.		4 Gang (AM Sections: Ant. 11-244mmf, Osc. 11-120mmf)
M2	Switch		Function

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

KNIGHT MODEL
KN-700A (92SU424)

KNIGHT MODEL
KN-700A (92SU424)

KNIGHT MODEL
KN-700A (92SU424)

TRADE NAME	Knight Model KN-700A (92SU424)
SUPPLIER	Allied Radio Corp., 100 N. Western Ave., Chicago 80, Illinois
TYPE SET	AC Operated 5 Tube Stereo Preamplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 19 Watts, .25 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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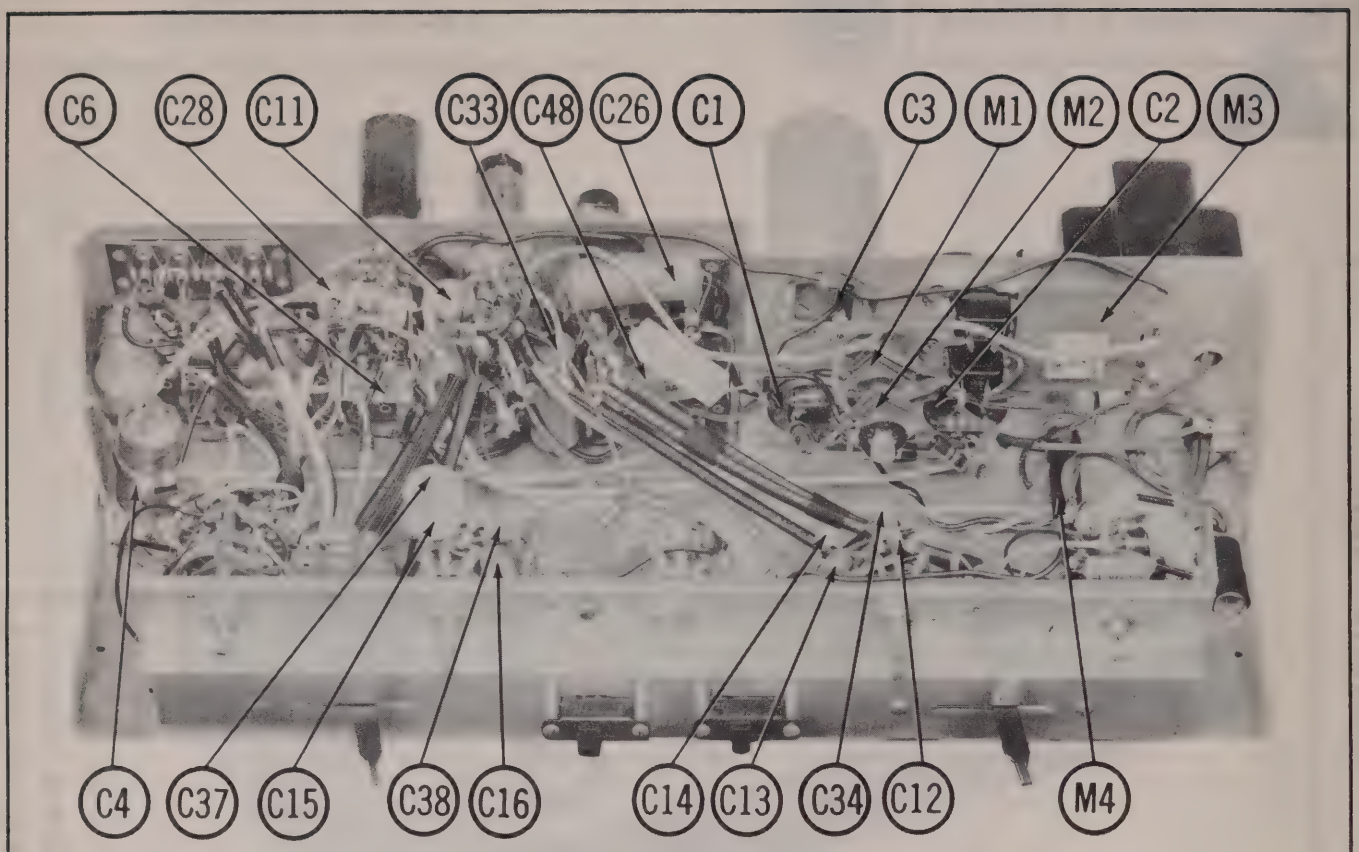
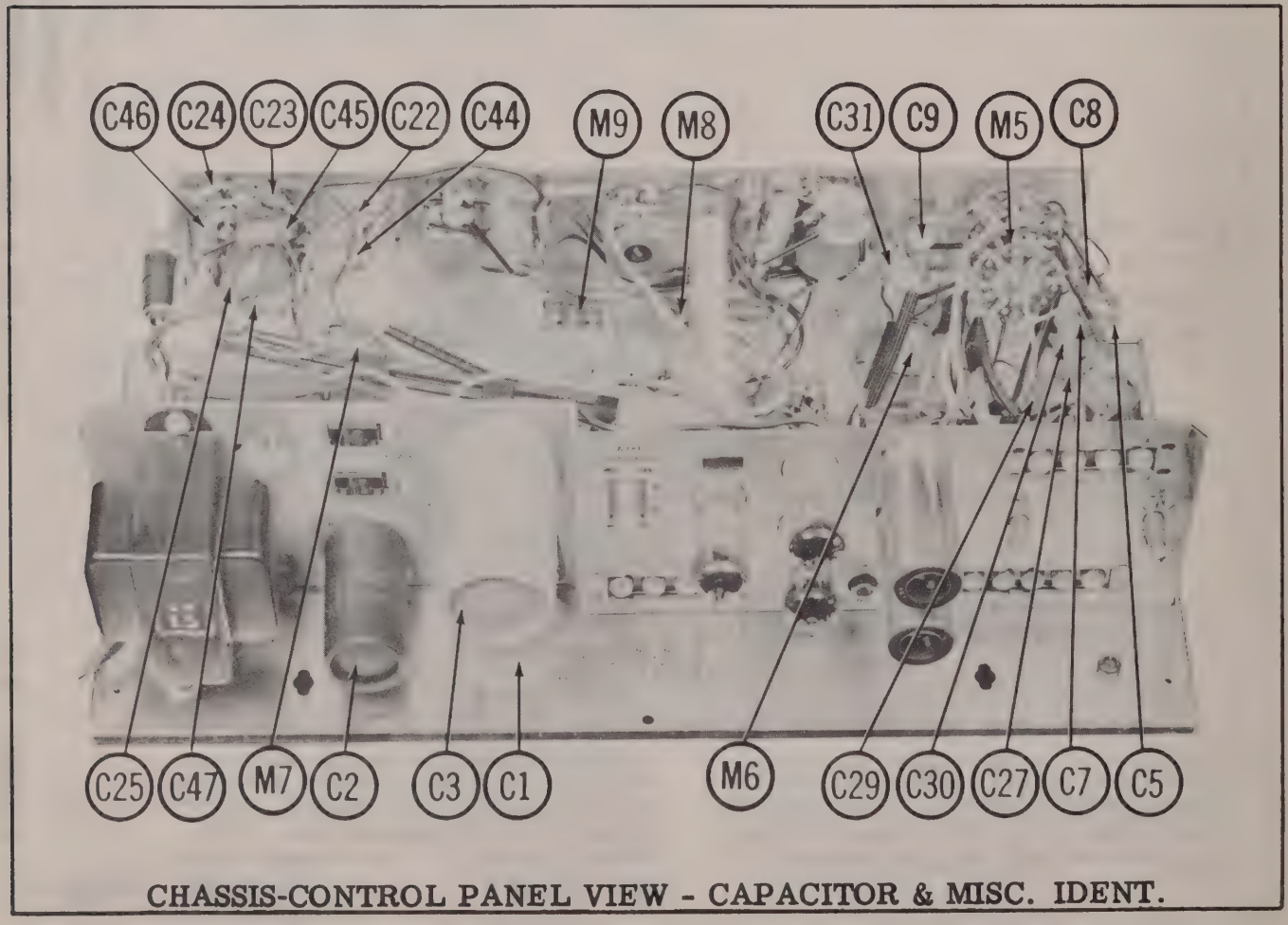
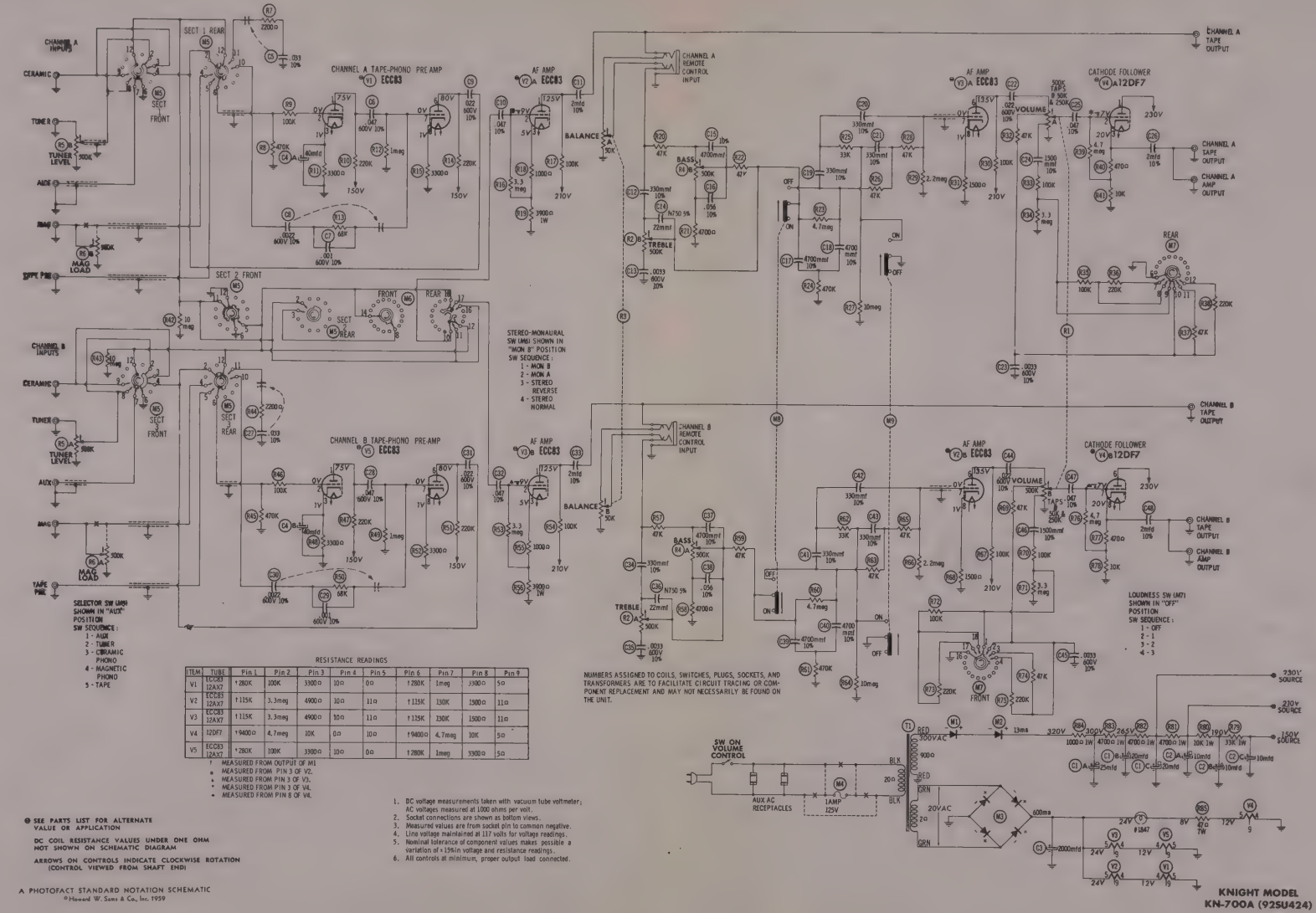


CHASSIS-TUBE SOCKET VIEW - CAPACITOR & MISC. IDENT.



CHASSIS-CONTROL PANEL VIEW - CAPACITOR & MISC. IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†280K	100K	3300Ω	10Ω	0Ω	†280K	1meg	3300Ω	5Ω
V2	ECC83 12AX7	†115K	3.3meg	4900Ω	10Ω	11Ω	†115K	130K	1500Ω	11Ω
V3	ECC83 12AX7	†115K	3.3meg	4900Ω	10Ω	11Ω	†115K	130K	1500Ω	11Ω
V4	12DF7	†9400Ω	4.7meg	10K	0Ω	10Ω	†9400Ω	4.7meg	10K	5Ω
V5	ECC83 12AX7	†280K	100K	3300Ω	10Ω	0Ω	†280K	1meg	3300Ω	5Ω

† MEASURED FROM OUTPUT OF M1
● MEASURED FROM PIN 3 OF V2.
▲ MEASURED FROM PIN 3 OF V3.
* MEASURED FROM PIN 3 OF V4.
▪ MEASURED FROM PIN 8 OF V4.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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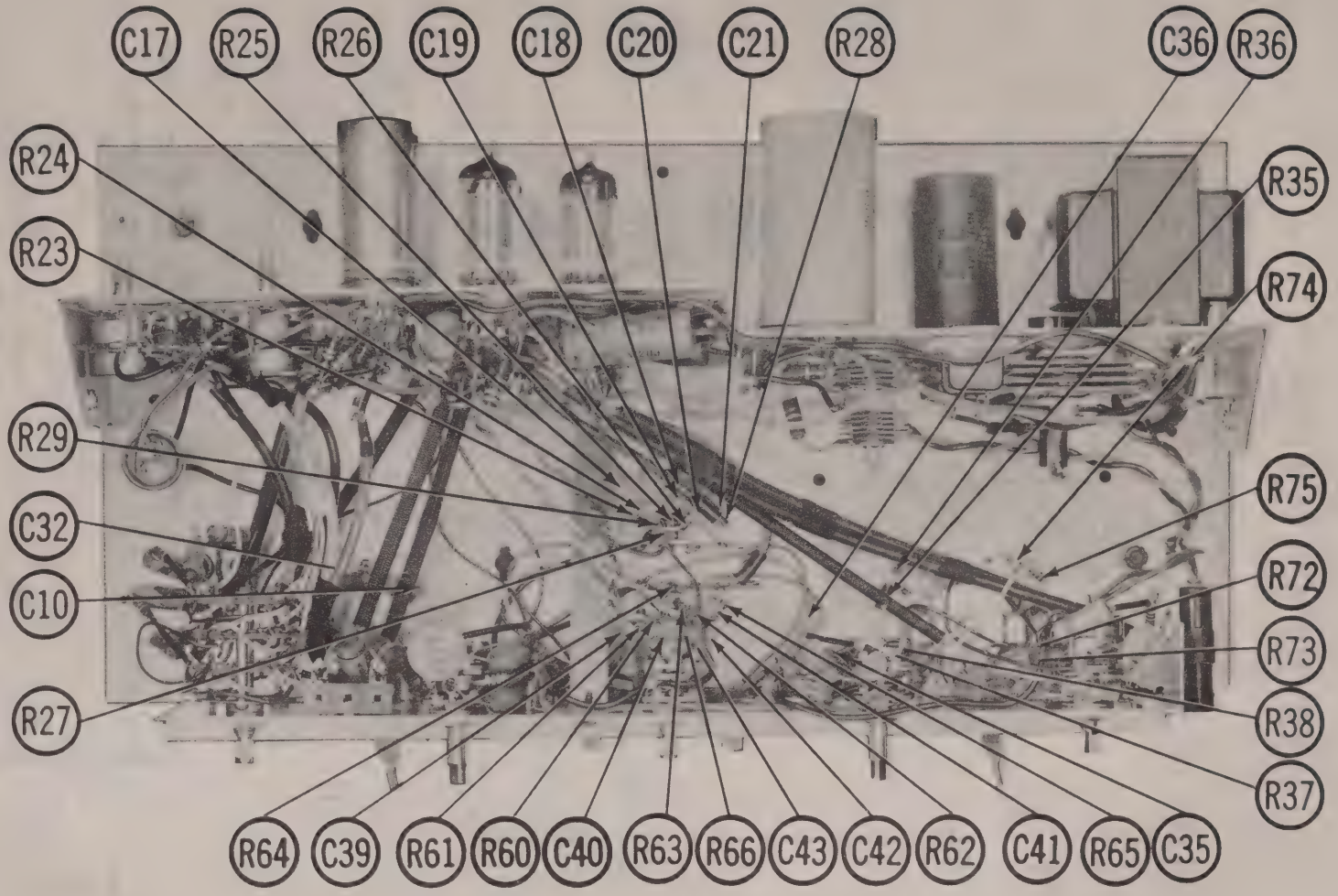
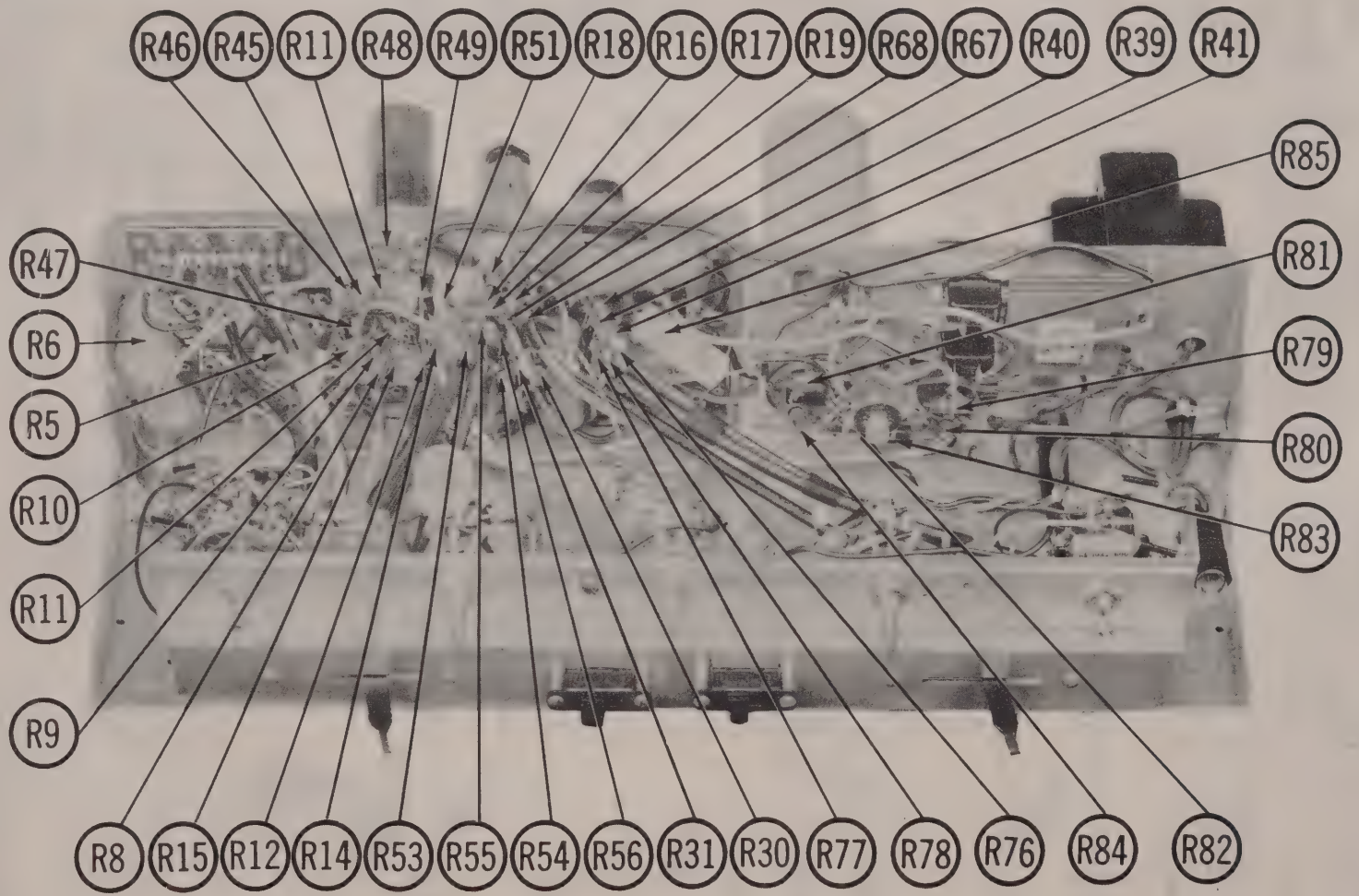


CHASSIS-BOTTOM VIEW - CAPACITOR & RESISTOR IDENT.

KNIGHT MODEL
KN-700A (92SU424)



CHASSIS-TUBE SOCKET VIEW - RESISTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A Tape-Phono Preamp.	ECC83/12AX7 (12DF7) *	V4	Channel A Cathode Foll. - Channel B Cathode Foll.	12DF7 (12AX7) *
V2	Channel A AF Amp. - Channel B AF Amp.	ECC83/12AX7 (12DF7) *	V5	Channel B Tape-Phono Preamp.	ECC83/12AX7 (12DF7) *
V3	Channel A AF Amp. - Channel B AF Amp.	ECC83/12AX7 (12DF7) *			

* Alternate

ELECTROLYTIC CAPACITORS

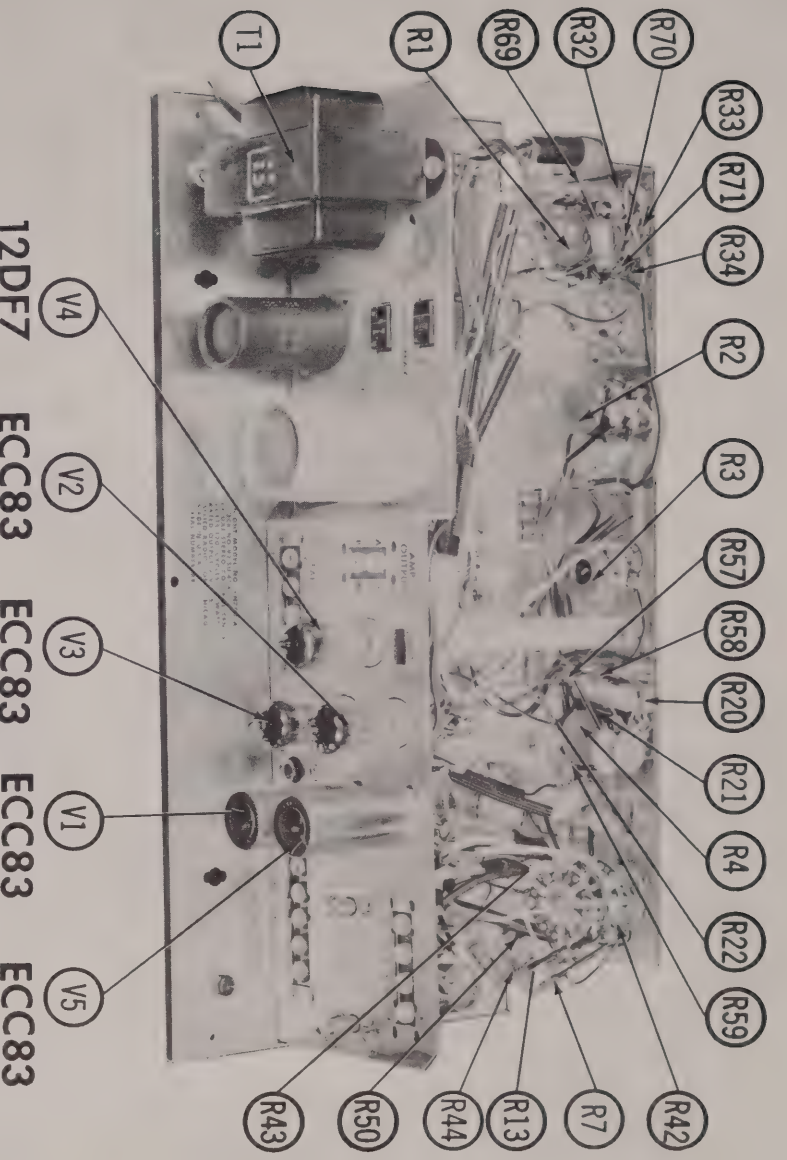
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲25	350		AFH3-37	C0280	FP376.5	TMQ-55	TVL-3781	
B	▲20	350							
C	■20	350							
C2A	■10	300		AFH3-27	C0210	FP330.5	TMT-22	TVL-3580	
B	▲10	300							
C	10	300							
C3	2000	30		AFH1-14-50		WP068 / TC2505		TVLS-1250 *	
C4A	40	25		PRS150V4040	BBRD4415	TCD48	TDLD-7	TVA-2445	
B	40	25							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	.033	200	10%		V84C2S33 10%		PM6S33	GTM-6133	6TM-S33	
C6	.047	600	10%		V84C6S47 10%		PM6S47	GTM-6147	6TM-S47	
C7	.001	600	10%		V84C6D1 10%		PM6D1	GTM-621	6TM-D1	
C8	.0022	600	10%		V84C6D22 10%		PM6D22	GTM-6222	6TM-D22	
C9	.022	600	10%		V84C6S22 10%		PM6S22	GTM-6122	6TM-S22	
C10	.047	200	10%		V84C2S47 10%		PM2S47	GTM-4147	2TM-S47	
C11	2.0	200	10%				MP2W2	GTM-22	118P20502S2	
C12	330		10%		DI-330	MD-331	L10T33	JL-333	MS-333	
C13	.0033	600	10%		V84C6D33 10%		PM6D33	GTM-6233	6TM-D33	
C14	22		N750 5%			DTN-22	C10Q22U	CN7-422	5TCU-Q22	
C15	4700		10%		DI-4700		PM6D47	JL-247	6TM-D47	
C16	.056	200	10%				PM6S6	GTM-416	6TM-S6	
C17	4700		10%		DI-4700		PM6D47	JL-247	6TM-D47	
C18	4700		10%		DI-4700		PM6D47	JL-247	6TM-D47	
C19	330		10%		DI-330	MD-331	L10T33	JL-333	MS-333	
C20	330		10%		DI-330	MD-331	L10T33	JL-333	MS-333	
C21	330		10%		DI-330	MD-331	L10T33	JL-333	MS-333	
C22	.022	600	10%		V84C6S22 10%		PM6S22	GTM-6122	6TM-S22	
C23	.0033	600	10%		V84C6D33 10%		PM6D33	GTM-6233	6TM-D33	
C24	1500		10%		DI-1500	DD-152	L10D15	B-215	10TS-D15	
C25	.047	200	10%		V84C2S47 10%		PM2S47	GTM-4147	2TM-S47	
C26	2.0	200	10%				MP2W2	GTM-22	118P20502S2	
C27	.033	200	10%		V84C2S33 10%		PM6S33	GTM-4133	6TM-S33	
C28	.047	600	10%		V84C6S47 10%		PM6S47	GTM-6147	6TM-S47	
C29	.001	600	10%		V84C6D1 10%		PM6D1	GTM-621	6TM-D1	
C30	.0022	600	10%		V84C6D22 10%		PM6D22	GTM-6222	6TM-D22	
C31	.022	600	10%		V84C6S22 10%		PM6S22	GTM-6122	6TM-S22	
C32	.047	200	10%		V84C2S47 10%		PM2S47	GTM-4147	2TM-S47	
C33	2.0	200	10%				MP2W2	GTM-22	118P20502S2	
C34	330		10%		DI-330	MD-331	L10T33	JL-333	MS-333	
C35	.0033	600	10%		V84C6D33 10%		PM6D33	GTM-6233	6TM-D33	
C36	22		N750 5%			DTN-22	C10Q22U	CN7-422	5TCU-Q22	
C37	4700		10%		DI-4700		PM6D47	JL-247	6TM-D47	
C38	.056	200	10%				PM6S6	GTM-416	6TM-S6	
C39	4700		10%		DI-4700		PM6D47	JL-247	6TM-D47	
C40	4700		10%		DI-4700		PM6D47	JL-247	6TM-D47	



KNIGHT MODEL
KN-700A (92SU424)

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C41	330		10%		DI-330	MD-331	L10T33	JL-333	MS-333	
C42	330		10%		DI-330	MD-331	L10T33	JL-333	MS-333	
C43	330		10%		DI-330	MD-331	L10T33	JL-333	MS-333	
C44	.022	600	10%		V84C6S22 10%		PM6S22	GTM-6122	6TM-S22	
C45	.0033	600	10%		V84C6D33 10%		PM6D33	GTM-6233	6TM-D33	
C46	1500		10%		DI-1500	DD-152	L10D15	B-215	10TS-D15	
C47	.047	200	10%		V84C2S47 10%		PM2S47	GTM-4147	2TM-S47	
C48	2.0	200	10%				MP2W2	GTM-22	118P20502S2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	KNIGHT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K *	½	RP-105AH					Volume, Channel A
B	500K *	½						Volume, Channel B
C	Switch							Power Off-On
R2A	500K	½	RP-105AG					Treble, Channel B
B	500K	½						Treble, Channel A
R3A	50K	½	RP-104X					Balance, Channel A
B	50K	½						Balance, Channel B
R4A	500K	½	RP-105AG					Bass, Channel B
B	500K	½						Bass, Channel A
R5A	500K	½	RP-105AJ	F1-41		■ QJ-1110R	▲ UE4030	Tuner Level, Channel B
B	500K	½		R2-41				Tuner Level, Channel A
R6A	500K	½	RP-105AJ	F1-41		■ QJ-1110R	▲ UE4030	Mag. Load, Channel B
B	500K	½		R2-41				Mag. Load, Channel A

* Taps ⓐ 50K and 250K

■ "Concentrikit" equivalent: K-2 Kit with base elements & shafts: B13-133, P9-018 (Panel) B13-133, R11-028 (Rear)
(Not available as factory assembled unit.)

▲ "STA-LOC" equivalent: FA55A, RU55A, OK625, IK875.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	2200Ω	
R8	470K	
R9	100K	
R10	220K	
R11	3300Ω	
R12	1meg	
R13	68K	
R14	220K	
R15	3300Ω	
R16	3.3meg	
R17	100K	
R18	1000Ω	
R19	3900Ω 1W	
R20	47K	
R21	4700Ω	
R22	47K	
R23	4.7meg	
R24	470K	
R25	33K	
R26	47K	
R27	10meg	
R28	47K	
R29	2.2meg	
R30	100K	
R31	1500Ω	
R32	47K	
R33	100K	

ITEM No.	RATING	REMARKS
R34	3.3meg	
R35	100K	
R36	220K	
R37	47K	
R38	220K	
R39	4.7meg	
R40	470Ω	
R41	10K	
R42	10meg	
R43	10meg	
R44	2200Ω	
R45	470K	
R46	100K	
R47	220K	
R48	3300Ω	
R49	1meg	
R50	68K	
R51	220K	
R52	3300Ω	
R53	3.3meg	
R54	100K	
R55	1000Ω	
R56	3900Ω 1W	
R57	47K	
R58	4700Ω	
R59	47K	
R60	4.7meg	

ITEM No.	RATING	REMARKS
R61	470K	
R62	33K	
R63	47K	
R64	10meg	
R65	47K	
R66	2.2meg	
R67	100K	
R68	1500Ω	
R69	47K	
R70	100K	
R71	3.3meg	
R72	100K	
R73	220K	
R74	47K	
R75	220K	
R76	4.7meg	
R77	470Ω	
R78	10K	
R79	33K 1W	
R80	10K 1W	
R81	4700Ω 1W	
R82	4700Ω 1W	
R83	4700Ω 1W	
R84	1000Ω 1W	
R85	47Ω 7W	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	KNIGHT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .25A	300V ⓐ .0075A	20V ⓐ .450A	LP-0280						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	KNIGHT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.013A	JR-0032①	1234AH①	RS065①	65A①		① Selenium Type
M2	.013A	JR-0032①	1234AH①	RS065①	65A①		
M3	605A	JR-0030A①	1017①	D-6194 ①	604B①		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			KNIGHT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M4	3AG	1A 125V			313001. (3AG 1A 125V)	341001	AGC 3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
M5	Switch	X-0372	Selector (Aux-Tuner-Ceramic Phono-Mag. Phono-Tape)
M6	Switch	X-0371	Stereo-Monaural
M7	Switch	X-0370	Loudness
M8	Switch		Rumble Filter (DPDT, Slide Type)
M9	Switch		Scratch Filter (DPDT, Slide Type)

CABINETS & CABINET PARTS

When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color

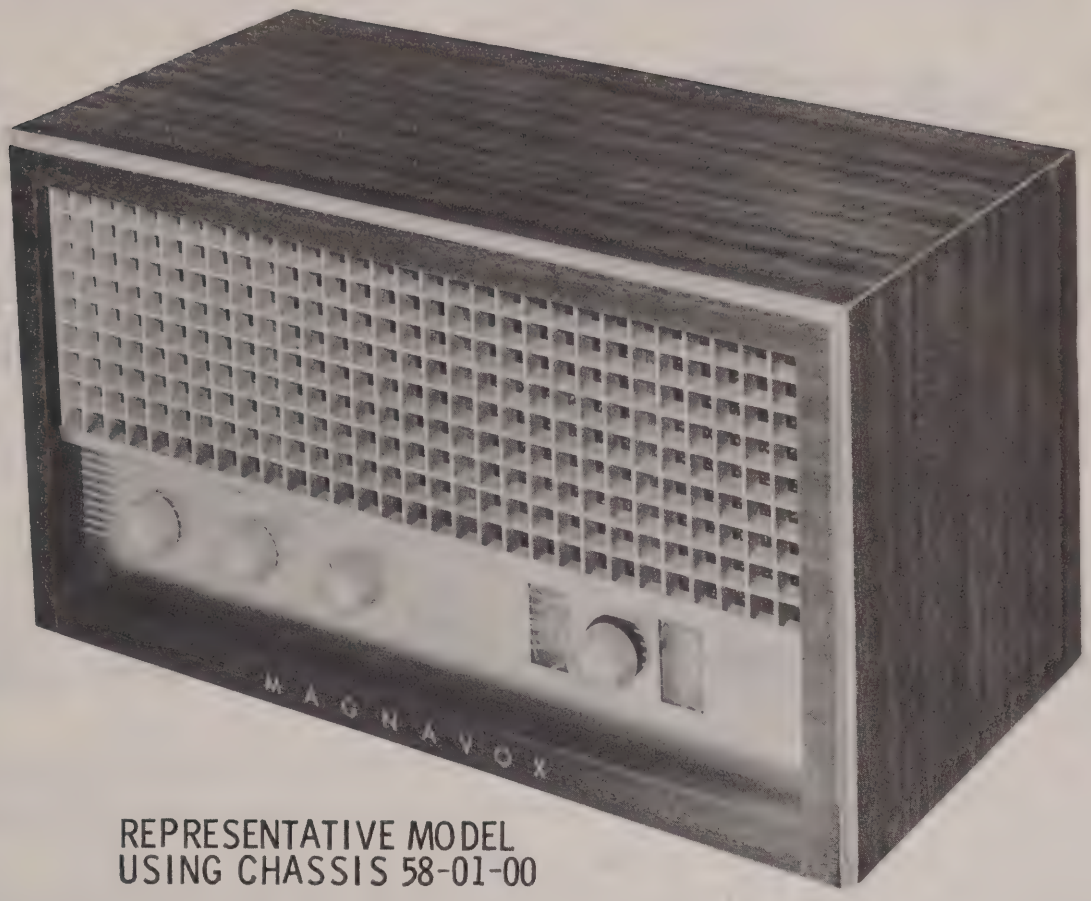
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder with CIRCUITRACE*

MAGNAVOX
CHASSIS 58-01-00

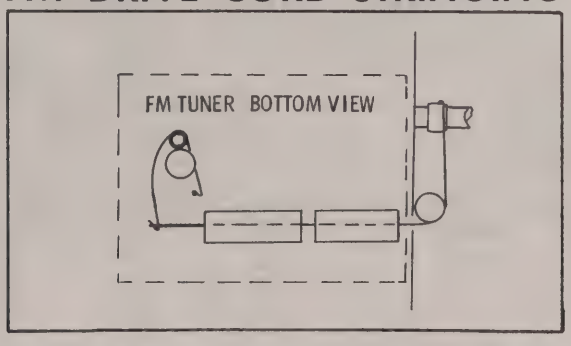


REPRESENTATIVE MODEL
USING CHASSIS 58-01-00

MAGNAVOX
CHASSIS 58-01-00

TRADE NAME	Magnavox Chassis 58-01-00		
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Indiana		
TYPE SET	AC-DC Operated 7 Tube FM-AM Receiver		
POWER SUPPLY	110-120 Volts AC-DC	RATING	28 Watts, .32 Amp. @ 117 Volts AC
TUNING RANGE	BROADCAST 535 - 1605KC	FREQ. MOD.	88 108MC

FM DRIVE CORD STRINGING

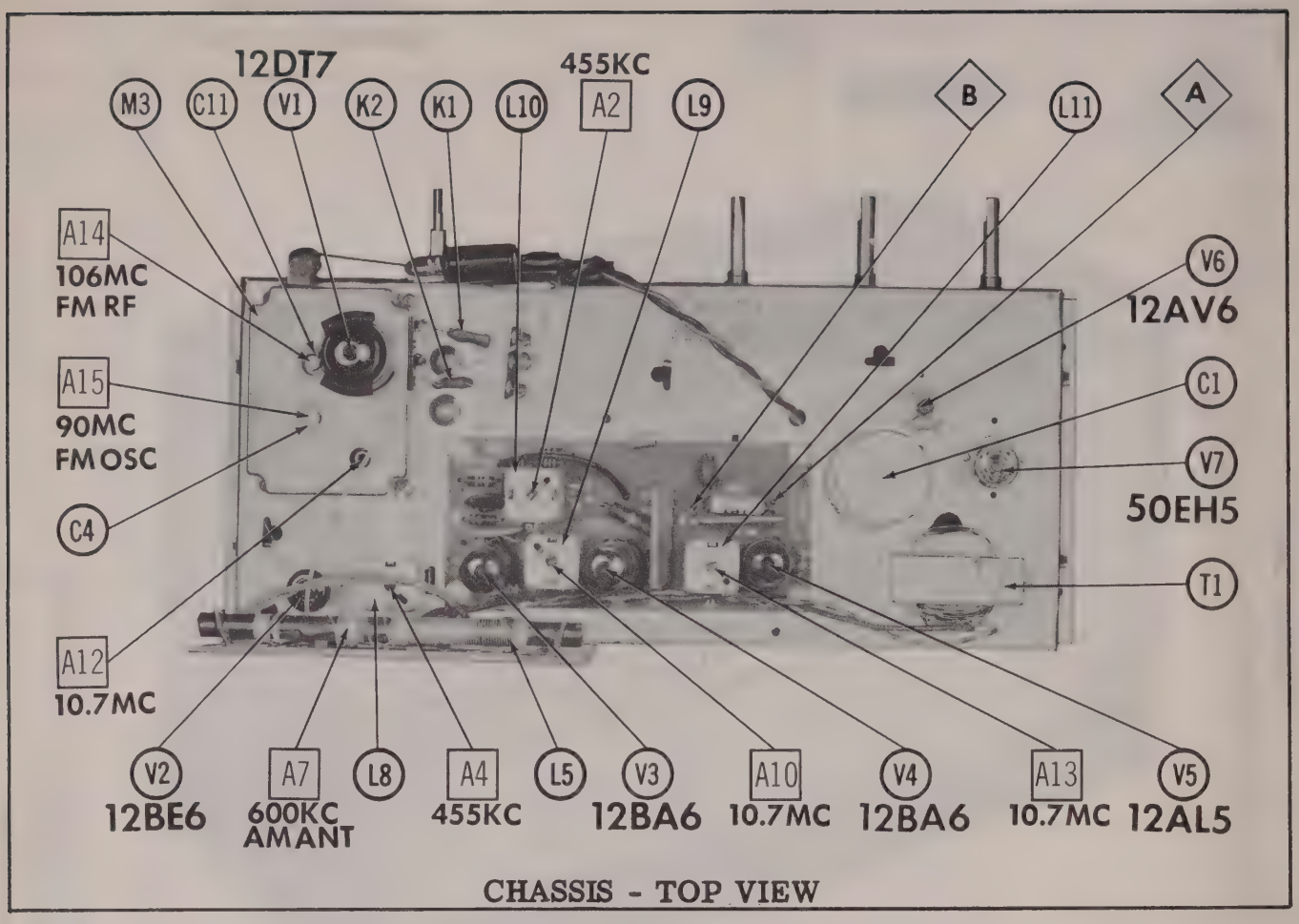


HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

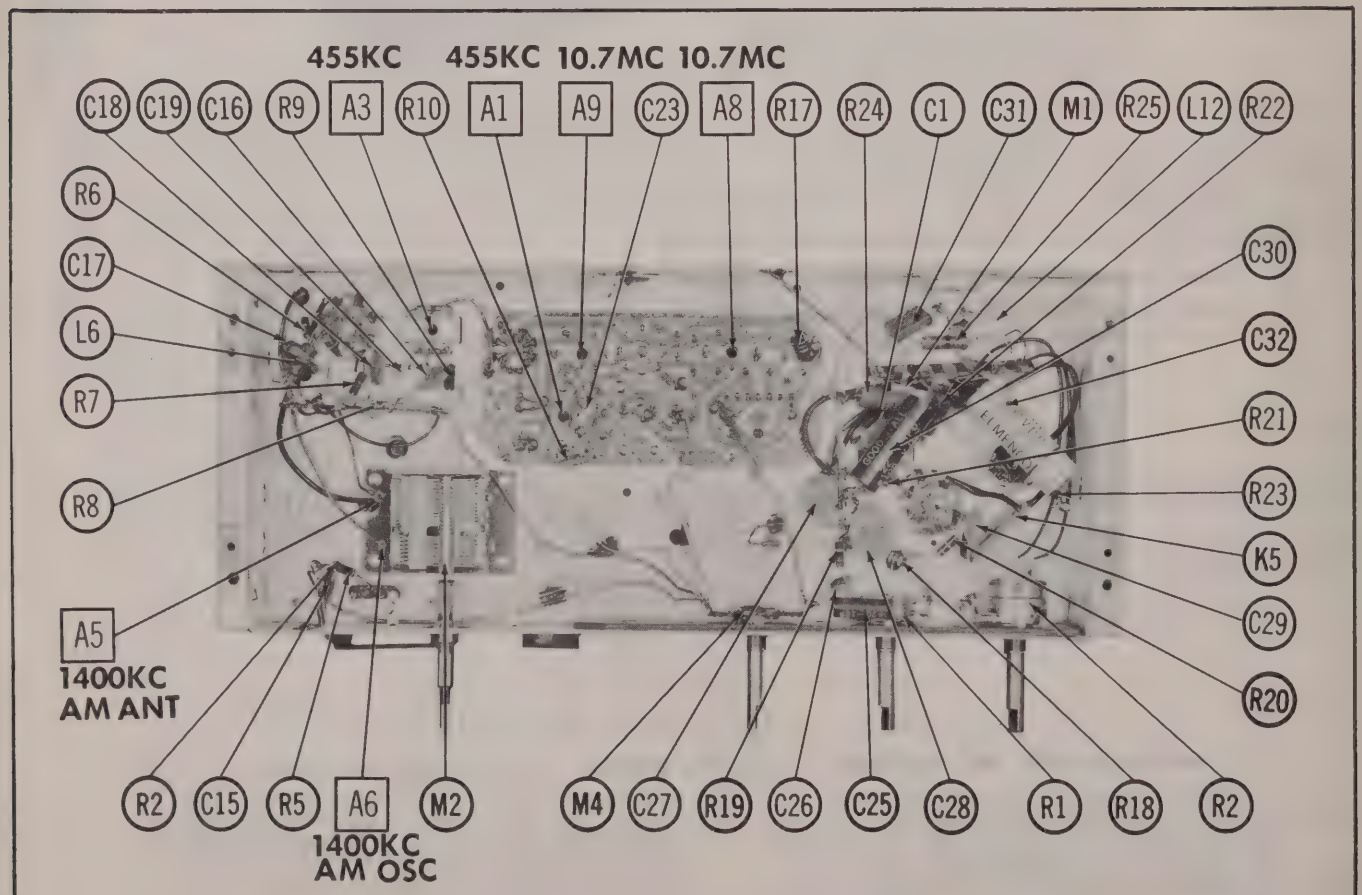
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JK306

SET 463 FOLDER 6



CHASSIS - TOP VIEW



CHASSIS - BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4, A8, A9, A10, A13 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A11, A12 ..... GENERAL CEMENT #8282, 8606, 8606L, 9091
WALSCO #2526, 2541, 2543, 2544
A14, A15 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to Pin 7 AM Converter. Low side to chassis.	455KC (400∿ Mod.)	AM	Point of non-interference	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	10mmf	High side thru 10mmf to AM antenna terminal. Low side to chassis.	1400KC	"	1400KC	"	A5, A6	"
3.	"	"	600KC	"	600KC	"	A7	Adjust for maximum output. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	Direct	Place a thin insulated metal strip between the FM Converter tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	10.7MC (Unmod.)	FM	108MC	DC probe thru 1meg to point (A). Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe thru 1meg to point (B). Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	Place a thin insulated metal strip between the FM Converter tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	10.7MC (450KC Swp.)	FM	108MC	Vert. Amp. thru 1meg to point (A). Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	"	"	Vert. Amp. thru 1meg to point (B). Common to chassis.	A13	Reconnect C2. Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Two 120Ω Carbon Resistors	Across FM antenna terminals with 120Ω in each lead.	106MC (Unmod.)	FM	106MC	DC probe thru 1meg to point (A). Common to chassis.	A14	Adjust for maximum deflection.
7.	"	"	90MC	"	90MC	"	A15	Adjust for maximum deflection. Repeat steps 6 and 7.

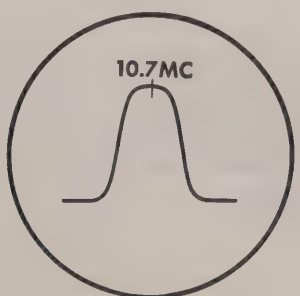


FIG. 1

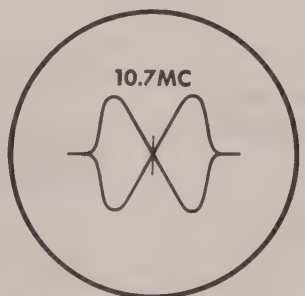
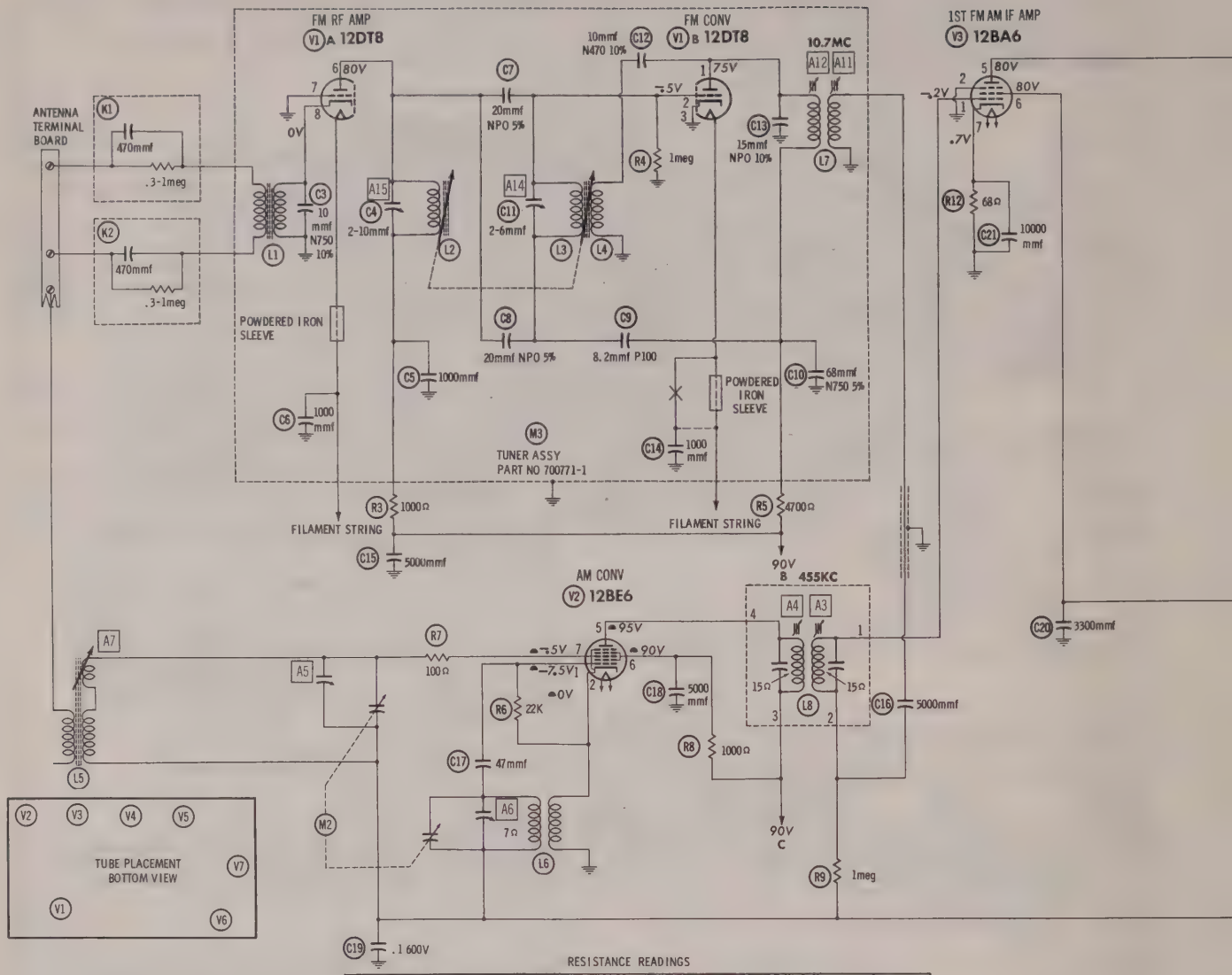


FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DT8	†5700Ω	1meg	0Ω	12Ω	24Ω	†2000Ω	0Ω	.1Ω	0Ω
V2	12BE6	22K	.5Ω	24Ω	36Ω	†▲1000Ω	†▲2000Ω	▲2.7meg		
V3	12BA6	3.7meg	0Ω	72Ω	60Ω	†2000Ω	†2000Ω	68Ω		
V4	12BA6	470K	0Ω	60Ω	48Ω	†2000Ω	†17K	100Ω		
V5	12AL5	INF	INF	48Ω	36Ω	9200Ω	0Ω	9700Ω		
V6	12AV6	6.8meg	56Ω	0Ω	12Ω	0Ω	0Ω	†470K		
V7	50EH5	68Ω	470K	115Ω	72Ω	470K	†1000Ω	†320Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1.
▲ MEASURED IN "AM" POSITION.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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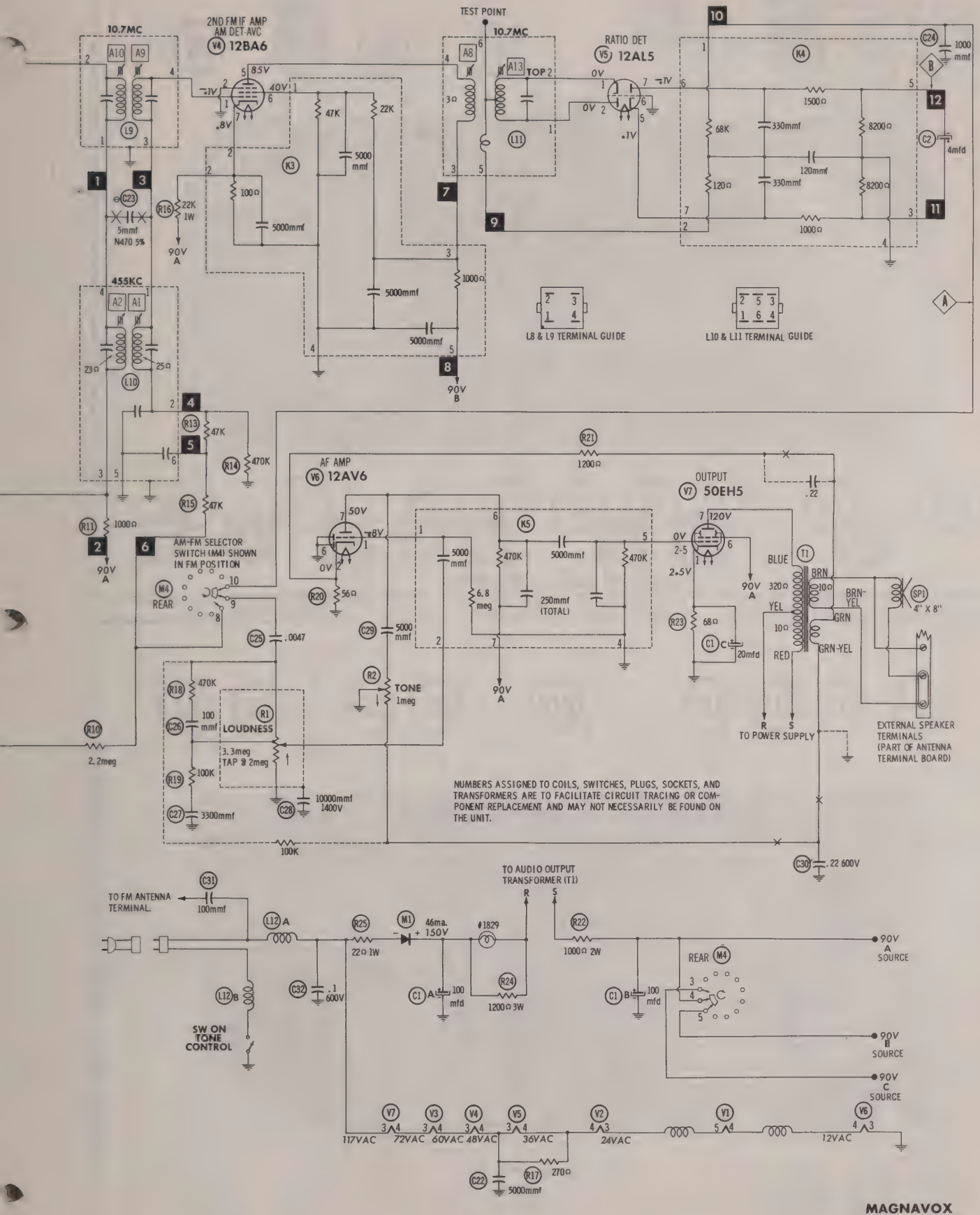
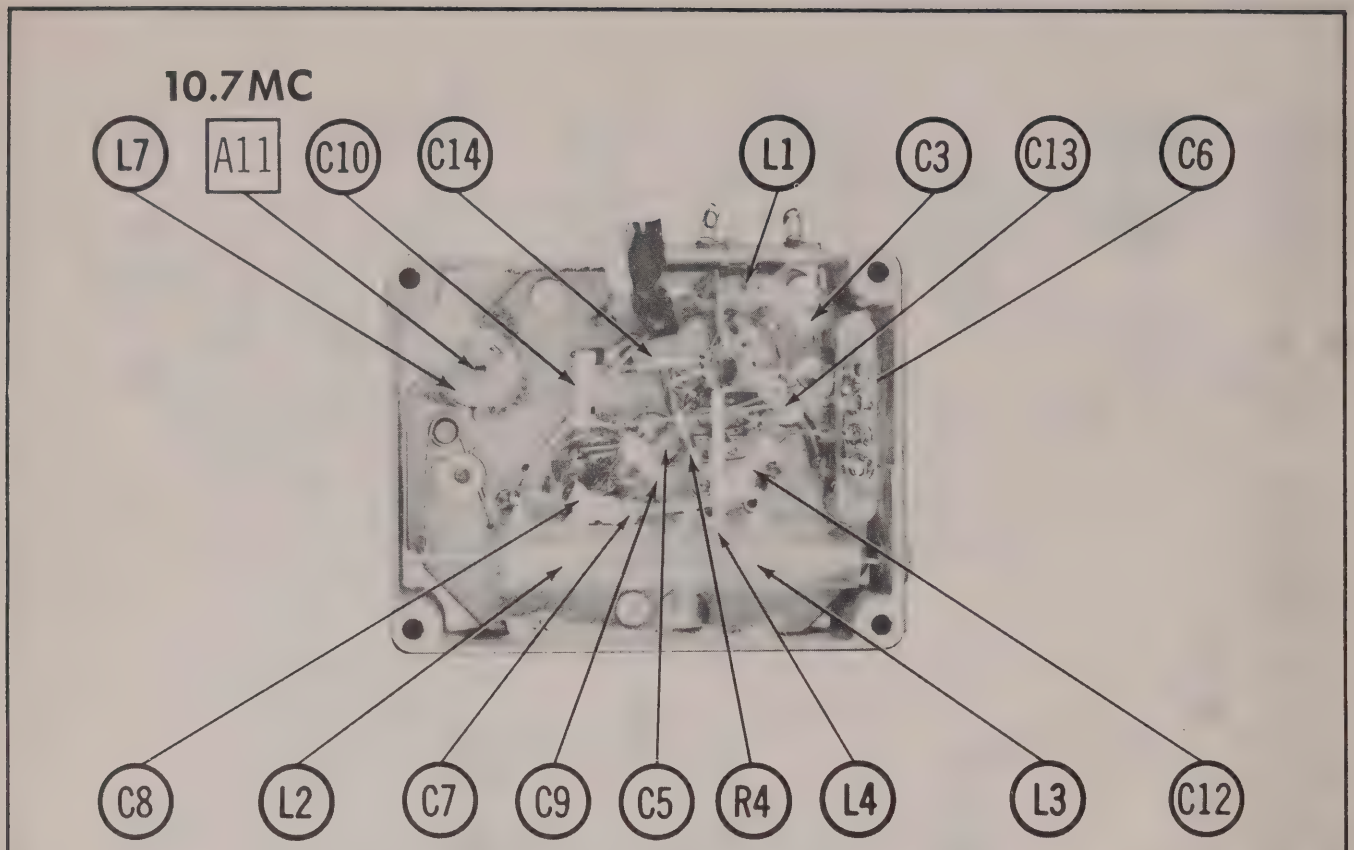
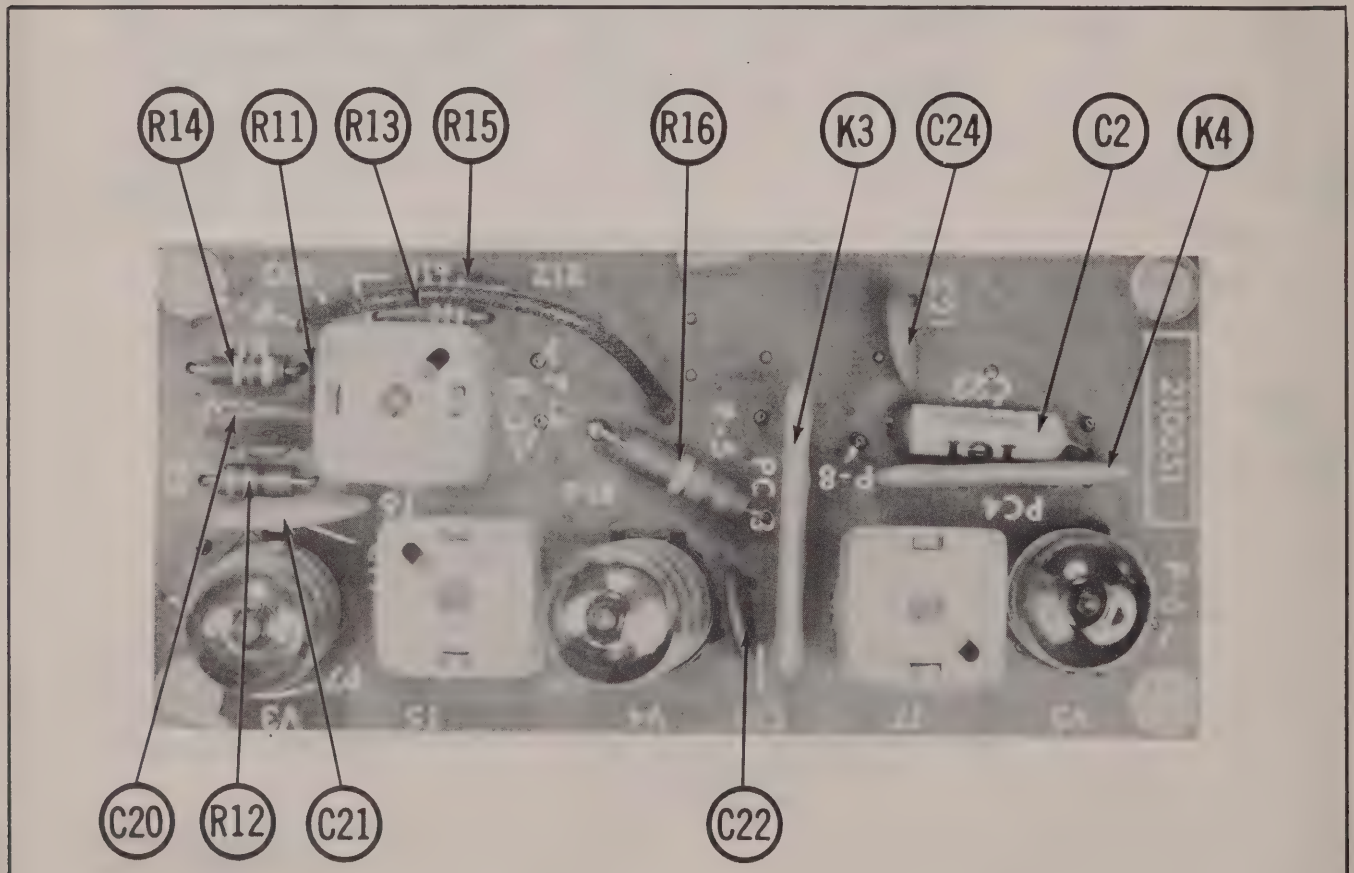


MAGNAVOX
CHASSIS 58-01-00

FOLDER 6



FM RF SUB CHASSIS



PRINTED BOARD - TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Conv.	12DT8	V5	Ratio Detector	12AL5
V2	AM Converter	12BE6	V6	AF Amplifier	12AV6
V3	1st FM - AM IF Amplifier	12BA6	V7	Output	50EH5
V4	2nd FM IF Amplifier - AM Det. - AVC	12BA6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	100	200	270021-79	AFH4-56-93	XB0194	FP332.4	TMT-165	TVL-2464	
B	100	200			BBR20-25		TD-10-25	TVA-1410	
C	20	25							
C2	4	50	270559-9	PWE50005	EC5-50	TT50X4	ML4-50	TE-1302.1	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

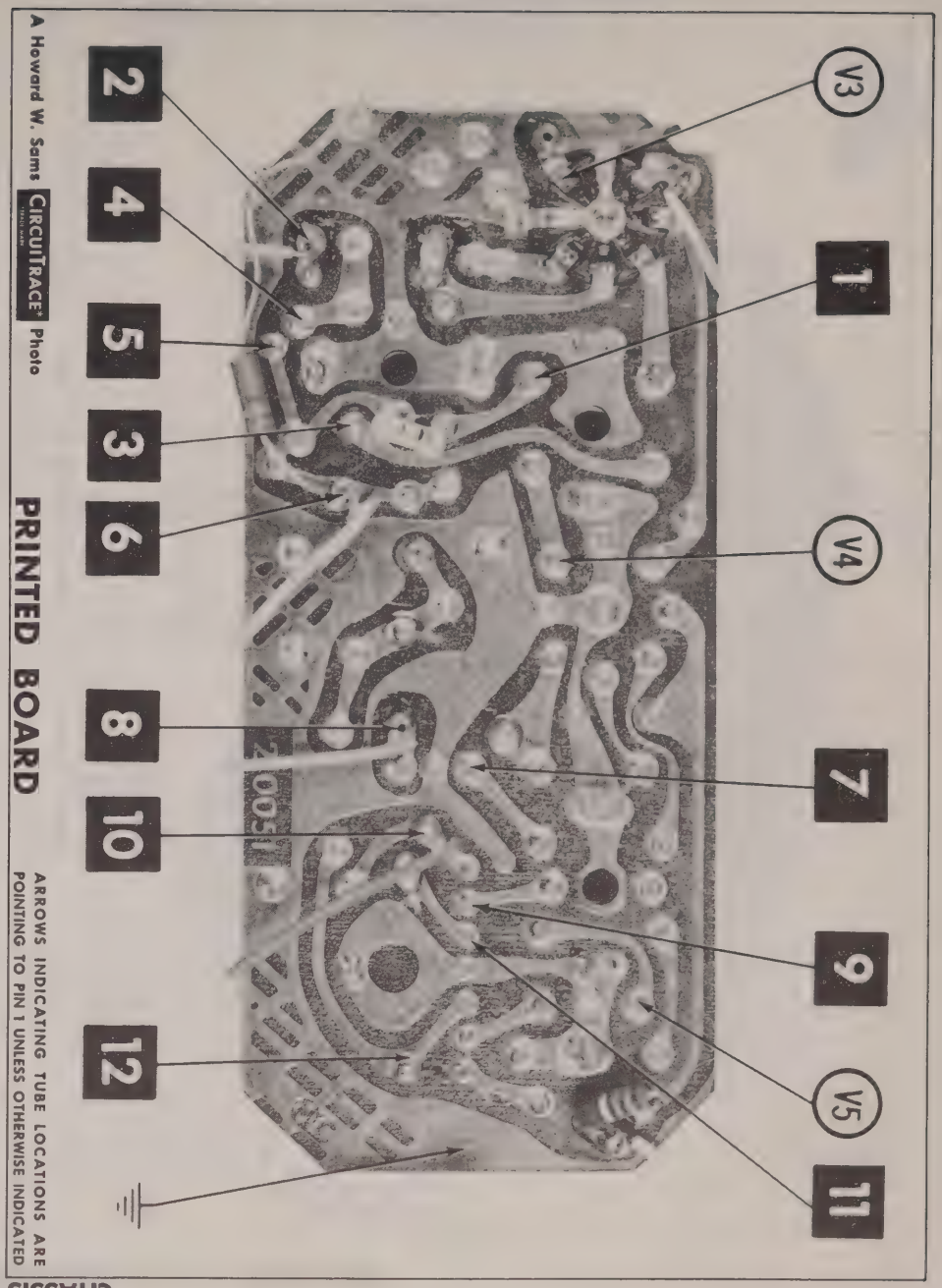
ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	10		N750 10%	250313-1	N750-SI 10	TCN-10	C10Q1U	NT-541	5TCU-Q1	
C4	2-10			250306-1		822BZ		ST-553-Z		
C5	1000			250314-1	SI 1000	D6-102	BYA10D1	UC-521	5HK-D1	
C6	1000			250314-1	SI 1000	D6-102	BYA10D1	UC-521	5HK-D1	
C7	20		NPO 5%	250309-1		TCZ-20	C10Q2C		5TCC-Q2	
C8	20		NPO 5%	250309-1		TCZ-20	C10Q2C		5TCC-Q2	
C9	8.2		P100	250310-1						
C10	68		N750 5%	250308-1		TCN-68	C10Q68U	CN7-468	5TCU-Q68	
C11	2-6			250307-1		822CZ		ST-5515Z		
C12	10		N470 10%	250312-1						
C13	15		NPO 10%	250311-1		TCZ-15	C10Q15C	CNO-415	5TCC-Q15	
C14	1000			250314-1	BPD-001	D6-102	BYA10D1	UC-521	5HK-D1	
C15	5000			250175-30	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C16	5000			250175-30	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C17	47			250218-47	BPD-000047	DD-470	L10Q47	CNO-447	5GA-Q47	
C18	5000			250175-30	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C19	.1	600		250201-13	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C20	3300			250234-154	BPD-0033	DD-332	BYA10D33	B-233	5HK-D33	
C21	10000			250234-66	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C22	5000			250175-30	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C23	5		N470 5%							①
C24	1000			250234-142	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C25	.0047	100		250261-9	P288N-0047	DD-472	CUB6D47	GTM-1247	6TM-D47	
C26	100			250218-22	BPD-0001	DD-101	L10T1	CNO-310	5GA-T1	
C27	3300			250218-24	BPD-0033	DD-332	BYA10D33	B-233	5HK-D33	
C28	10000	1400		250219-2	DAC-27	DD16-103	HVE16S1	2HV-110	20KKB-S1	
C29	5000			250175-30	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C30	.22	600		250261-29	P688N-22		CUB6P22	GEM-6022	6TM-P22	
C31	100			250159-98	1469-0001	DD-101	22R5T1	MC235	MS-31	
C32	.1	600		250201-13	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	

① Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	3.3meg	½	220131-16	BT-180		Q18-140X	UDT-303 *	Loudness, Tap ② 2meg
R2A	1meg	½	220073-30	B-70-S	A47-1meg-Z	Q13-137	U53	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Off-On

* Do not use first tap.



MAGNAVOX
CHASSIS 58-01-00

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	1000Ω	
R4	1meg	
R5	4700Ω	
R6	22K	
R7	100Ω	
R8	1000Ω	
R9	1meg	
R10	2.2meg	

ITEM No.	RATING	REMARKS
R11	1000Ω	
R12	68Ω	
R13	47K	
R14	470K	
R15	47K	
R16	22K 1W	
R17	270Ω	
R18	470K	

ITEM No.	RATING	REMARKS
R19	100K	
R20	56Ω	
R21	1200Ω	
R22	1000Ω 2W	
R23	68Ω	
R24	1200Ω 3W	
R25	22Ω 1W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MAGNAVOX PART No.	REPLACEMENT DATA
K1	FM Antenna Input	470mmf, .3-1meg	250233-1	Centralab RC-471 Sprague AC1-1
K2	FM Antenna Input	470mmf, .3-1meg	250233-1	Centralab RC-471 Sprague AC1-1
K3	Limiter Decoupling	(4) 5000mmf, 100Ω, 1000Ω, 22K, 47K	250255-1	
K4	Ratio Detector Net.	120mmf, (2) 330mmf, 120Ω, 1000Ω, 1500Ω, (2) 8200Ω, 68K	250254-1	
K5	Audio Coupling Net.	250mmf, (2) 5000mmf, (2) 470K, 6.8meg	250301-1	Aerovox PA-113-2 Centralab PC-151 Cornell-Dubilier 116TM2 Sprague DT-2

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		MAGNAVOX PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Antenna Trans.	360789-1						
L2	FM RF Tuning Coil	360791-1						
L3	FM Osc. Tuning Coil	†						
L4	RF Choke	†						
L5	Loopstick	360782-1						
L6	AM Osc. Coil	360702-1						
L7	1st FM IF Trans.	360790-1						
L8	1st AM IF Trans.	360611-1	16-6758	16-6758	BC-352	12-C1		
L9	2nd FM IF Trans.	360747-1	16-3490	16-3490		1463-PC		
L10	2nd AM IF Trans.	360781-1	16-6781	16-6781		13-PC6		
L11	Ratio Detector	360748-1	17-3492	17-3492		1465-PC		
L12A	Line Choke	360653-1	19-1001	19-1001	BC-562	4604		1.4uh
B	Line Choke		19-1001	19-1001	BC-562	4604		1.4uh

† Part of L2 Part #360791-1.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC. 1	MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5200Ω Tap @ 3%	70Ω SEC. 2 3-4Ω	320288-2							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MAGNAVOX PART No.	QUAM PART No.	
SP1	4" x 8"	PM	3-4Ω	584012		

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	MAGNAVOX PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.107A	530058-1 ①	CA102DA ①	SD-92 ①	K-200 ①	SR-200 ①	① Silicon Type

MISCELLANEOUS

ITEM No.	PART NAME	MAGNAVOX PART No.	NOTES
M2	Tuning Cap.	260139-3	AM 2 Gang (Ant. 26-376mmf, Osc. 15-105mmf)
M3	Tuner Ass'y.	700771-1	FM
M4	Switch	160169-10	Band Selector

CABINETS & CABINET PARTS

When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

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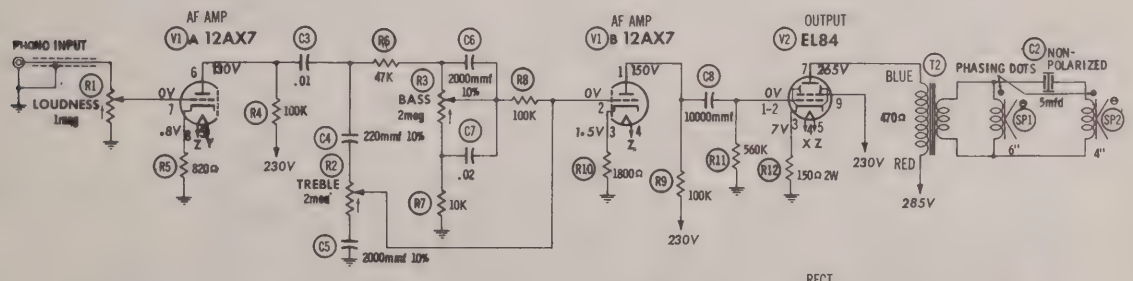
MOTOROLA MODELS HK31B, M, HK39B, CW, M, W, WA (Ch. HS-712A, -1)

MOTOROLA MODELS HK31B, M, HK39B, CW, M, W, WA (Ch. HS-712A, -1)

MODEL HK39M

TRADE NAME	Motorola Models HK31B, M; HK39B, CW, M, W, WA (Ch. HS-712A, HS-712A-1)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC Operated 3 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 40 Watts, .41 Amp. @ 117 Volts AC



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†100K	110K	1800Ω	Z3Ω	Z3Ω	†100K	0Ω	820Ω	Z3Ω
V2	EL84 6BQ5	560K	560K	150Ω	Z3Ω	Z3Ω	NC	†1100Ω	NC	†1400Ω
V3	6X4	130Ω	NC	Z3Ω	Z3Ω	NC	140Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V3.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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MOTOROLA MODELS HK31B, M, HK39B, CW, M, W, WA (Ch. HS-712A, -1)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JX267

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SET 463 FOLDER 7

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)

TUBES

ITEM No.	USE	TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	AF Amplifier	12AX7
V2	Output	EL84/6BQ5
V3	Rectifier	6X4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350	23B638559	AFH3-44	C0350	FP377	TMT-40	TVL-3787	
B	■40	350							
C	▲40	350							
C2	5	10NP	23A632250	NP-PRS50V4	BBR10-25†	TCN105	TD-10-25†	TVAS-1110*	

† Use 2 units. Connect negative terminals together.
Connect positive terminals into circuit the same as the original non-polarized unit.
* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.01	400		8R121002	P488N-01	DD-103	CUB4S1	GEM-411	4TM-S1	
C4	220		10%	21K121698	DI-220	D6-221	L10T22	JL-322	5GA-T22S 10%*	
C5	2000		10%	21K121836	DI-2000		1AD5S2	JL-220	5GA-S2S 10%*	
C6	2000		10%	21K121836	DI-2000		1AD5S2	JL-220	5GA-S2S 10%*	
C7	.02	400		8R121566	P488N-02	DD-203	CUB4S2	GEM-412	4TM-S2	
C8	10000			21R121946	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C9	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	①

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	18B642815				PP16A	Loudness
B	Switch						Not Req.	Push-Pull Power
R2A	2meg	½	18A638447	B-76	A47-2meg-Z	Q13-139	U55	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	2meg	½	18A638447	B-76	A47-2meg-Z	Q13-139	U55	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

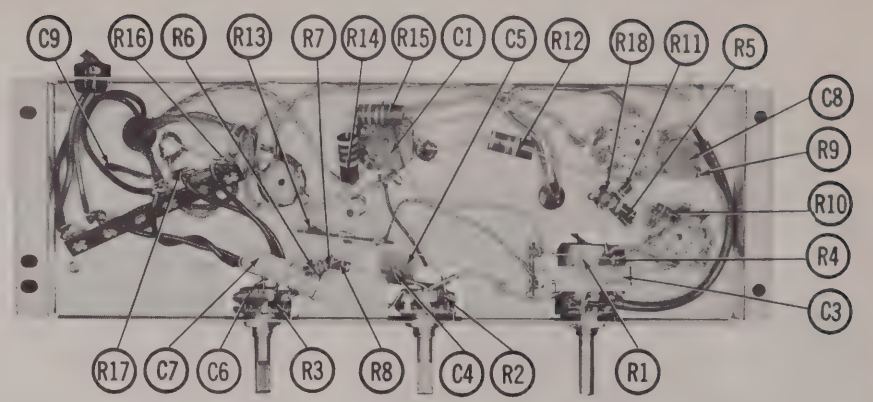
ITEM No.	RATING	REMARKS
R4	100K	
R5	820Ω	
R6	47K	
R7	10K	
R8	100K	

ITEM No.	RATING	REMARKS
R9	100K	
R10	1800Ω	
R11	560K	
R12	150Ω 2W	
R13	150Ω	

ITEM No.	RATING	REMARKS
R14	470Ω 2W	
R15	6800Ω 2W	
R16	47Ω	Note 1
R17	47Ω	Note 1
R18	1Ω 2W	Note 1

Note 1. Not used in Chassis HS-712A.

CHASSIS BOTTOM VIEW



TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② .41A	560VCT ② .050A	6.3V ② 1.4A	25C638852	22R30 ①	P-3154 ①		PC8420①	22R30 ①	

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5000Ω	6-8Ω	25B641660	22S58	A-2902 ①	AU-609	A-3337 ①	22S58	S-55X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	6"	PM		50K642464①	6A21Z8.4	① Models HK39B, CW, M, W, WA
	8"	PM		50C642618 ②	8A31Z6.7	② Models HK31B, M
SP2	4"	PM		50C636446	4A1TZ9	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36K642748	Loudness-On-Off
Knob	36K642751	Treble, Models HK31B, M
Knob	36K642753	Bass, Models HK31B, M
Knob	36K643278	Bass, Treble, Models HK39M, B, CW, W, WA
Cabinet	16K642941	Blond, Model HK31B
Cabinet	16E642940	Mahogany, Model HK31M
Cabinet	16K643281	Blond, Model HK39B
Cabinet	16K643712	Cherry Wood, Model HK39CW
Cabinet	16E643280	Mahogany, Model HK39M
Cabinet	16K643711	Walnut, Model HK39W
Cabinet	16K643839	American Walnut, Model HK39WA
Legs	16K642946	Blond, Model HK31B
Legs	16K642945	Mahogany, Model HK31M

PHOTOFACT* Folder with CIRCUITRACE*

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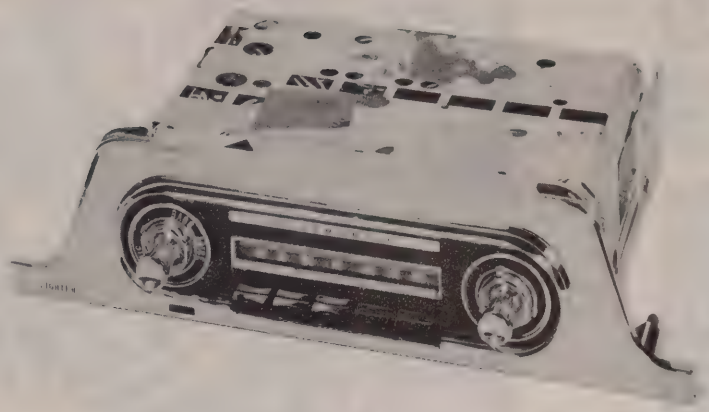
OLDSMOBILE MODEL 989172

OLDSMOBILE
MODEL 989172



TRADE NAME	Oldsmobile Model 989172 (For 1959 Oldsmobile Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated Custom Built Transistorized Automobile And Portable AM Receiver
POWER SUPPLY	12 Volt Storage Battery (Auto Unit) 5.2 Volts DC (Portable Unit)
RATING	1.7 Amp. @ 12.6 Volts DC (Auto Unit) 8MA @ 5.2 Volts DC (No Signal, Min. Volume) 10MA @ 5.2 Volts DC (Signal, Normal Volume)
TUNING RANGE--BROADCAST	535 -1615KC (Auto) 535 -1680KC (Port)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1 thru A4, A7..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

A5, A6, A9, A10, A11..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO#2512, 2525

A8, A12, A13..... GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to point A. Low side to chassis.	465KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1680KC	"	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Not Used		Near 600KC	"	A7	Adjust for maximum noise output.
4.		Loop	1400KC	Tune to 1400KC signal	"	A6	Retouch for maximum output.
	If it is necessary to align the pushbutton tuner, connect the portable to it and procede as follows. Check setting of oscillator slug (A8). Rear of core should be 1 5/8" from mounting end of coil form.						
5.	68mmf	High side to antenna receptacle. Low side to chassis.	1615KC	High Freq. end stop	Across voice coil	A9, A10, A11	Adjust for maximum output.
6.	"	"	600KC	600KC Signal	"	A12, A13	"
7.	"	"	1615KC	1615KC Signal	"	A10, A11	"

With radio installed in car and antenna fully extended, tune in a weak station near 1100KC and adjust A11 for maximum output.

Pointer Adjustment

With radio tuned to an 1100KC signal, adjust pointer to coincide with 1100KC mark on dial.

PUSHBUTTON ADJUSTMENT

1. Pull button to left and out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

DISASSEMBLY

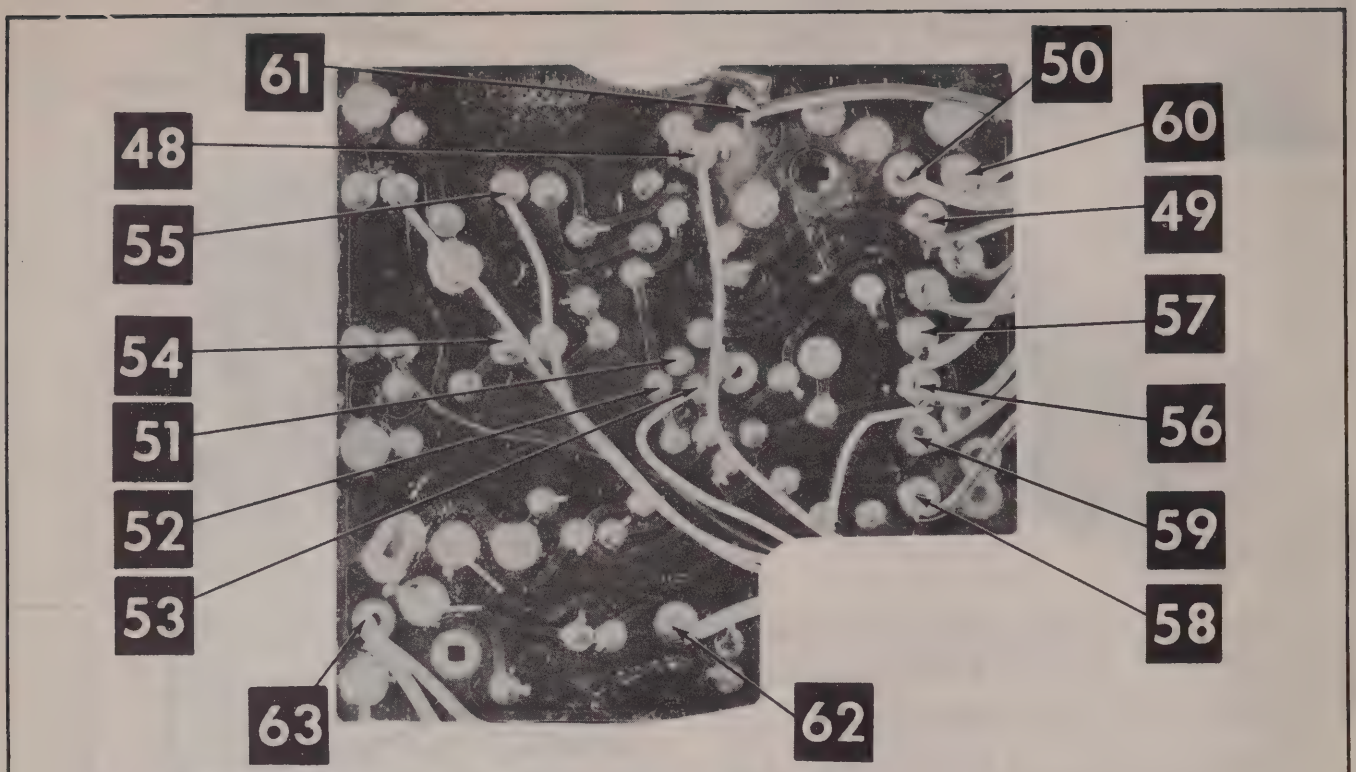
1. Remove 2 screws from rear cover. Remove cover.
2. Remove #4 Allen screws holding dial knob and pointer. Remove knob and pointer.
3. Remove 4 Phillips screws holding printed board to cabinet. Remove board.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

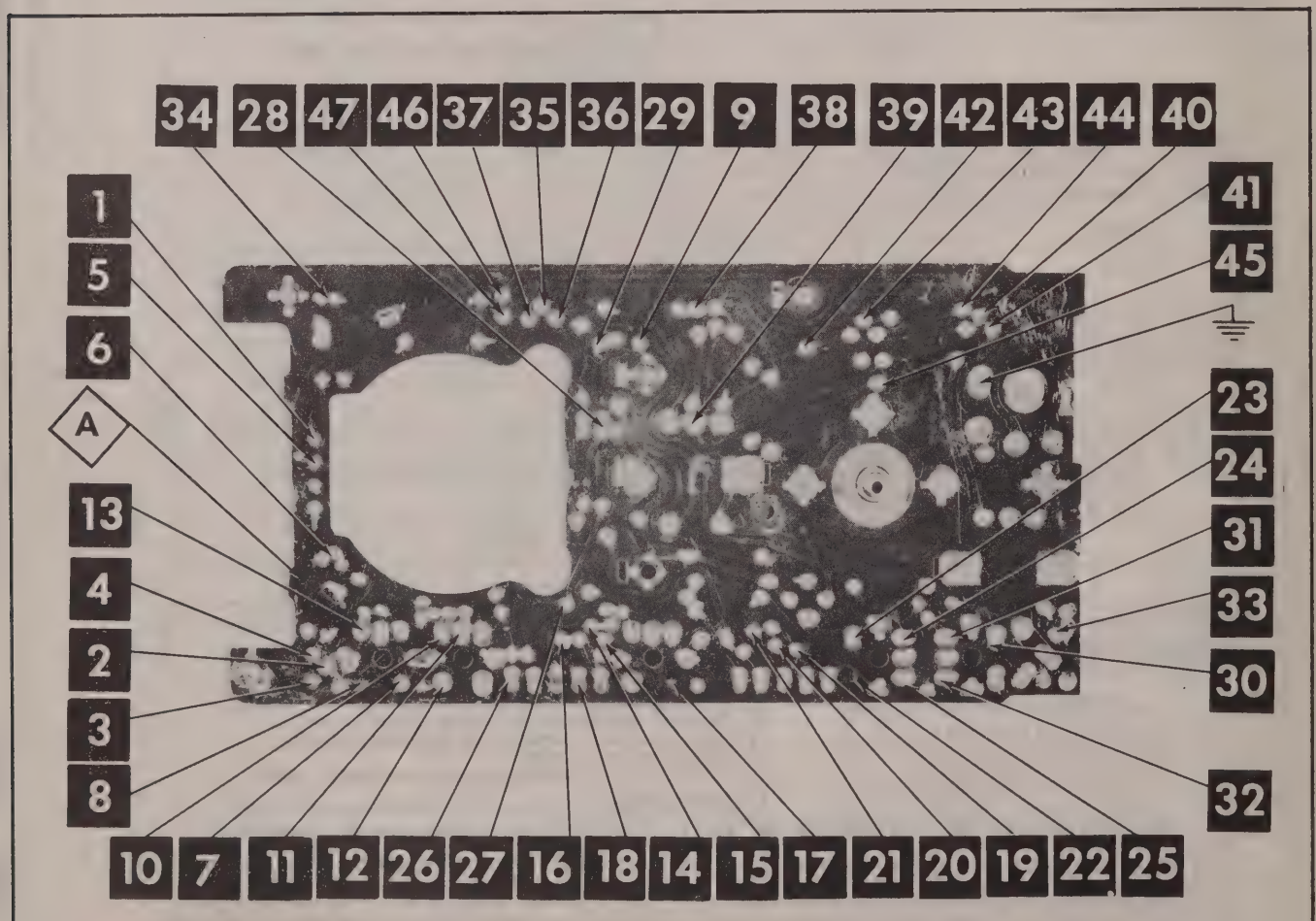
JE435

SET 463 FOLDER 8



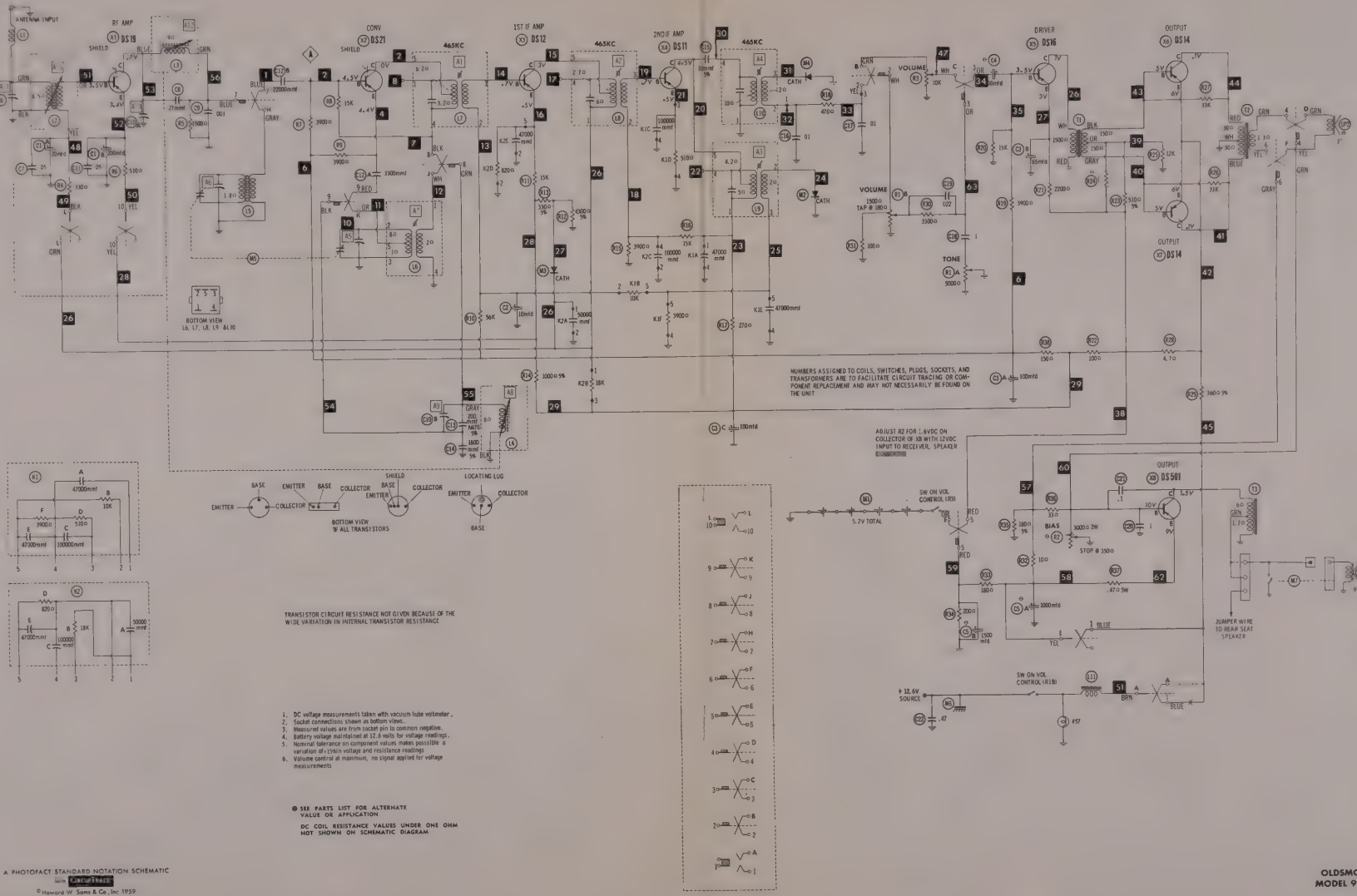
A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD (AUTO UNIT)



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD (PORTABLE UNIT)


ANTENNA INPUT
RF AMP
DS19
CONV
DS21
465KC
1ST IF AMP
DS12
2ND IF AMP
DS11
DRIVER
DS16
OUTPUT
DS14
OUTPUT
DS501
VOLUME
TONE
BIAS
BOTTOM VIEW
L6, L7, L8, L9 & L10
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
ADJUST R2 FOR 1.6VDC ON COLLECTOR OF X8 WITH 12VDC INPUT TO RECEIVER, SPEAKER DISCONNECTED
SW ON VOL CONTROL (R3)
5.2V TOTAL
STOP @ 350Ω
JUMPER WIRE TO REAR SEAT SPEAKER
SW ON VOL CONTROL (R1B)
+ 12.6V SOURCE
BASE
EMITTER
COLLECTOR
SHIELD
LOCATING LUG
BOTTOM VIEW OF ALL TRANSISTORS
TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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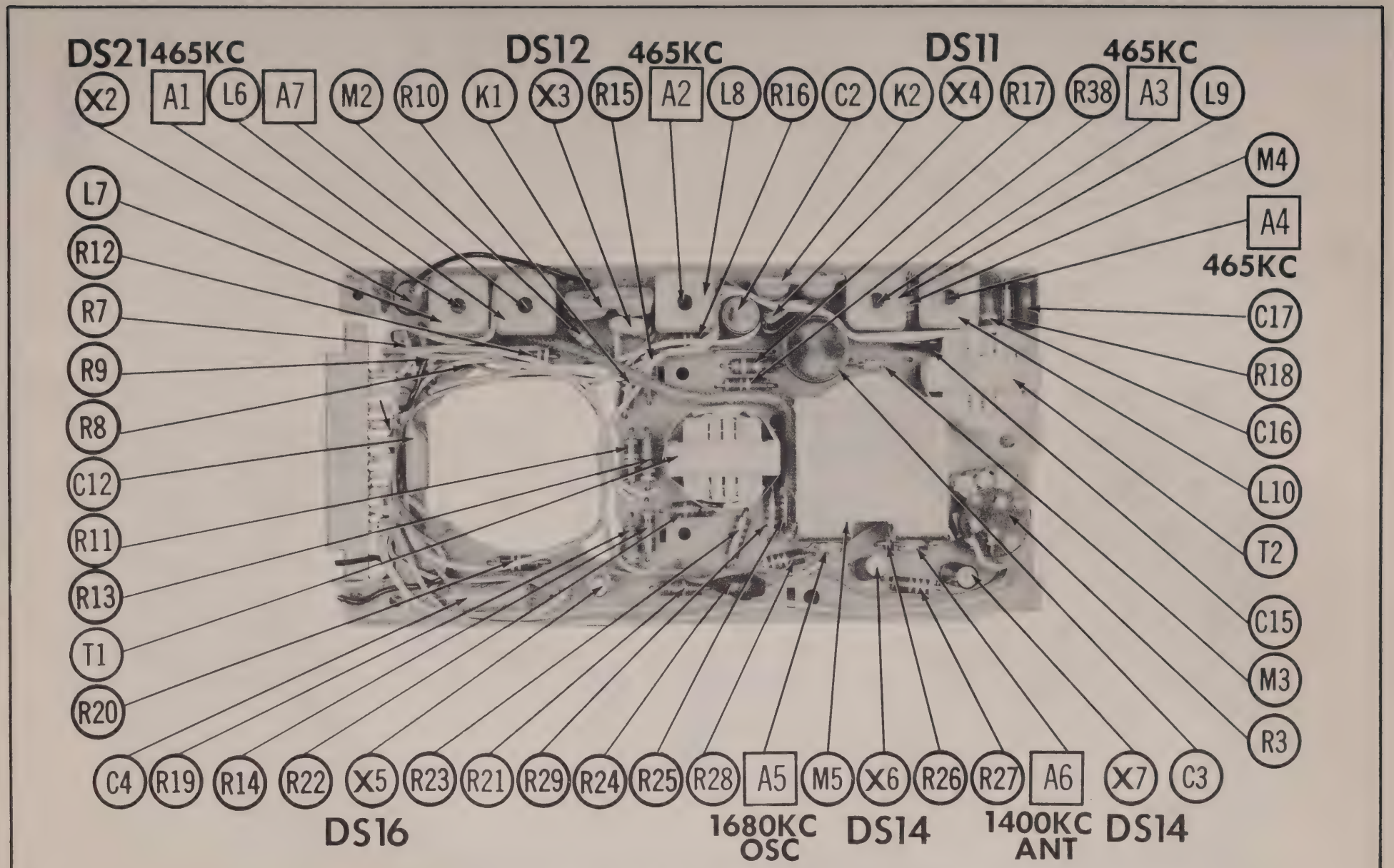
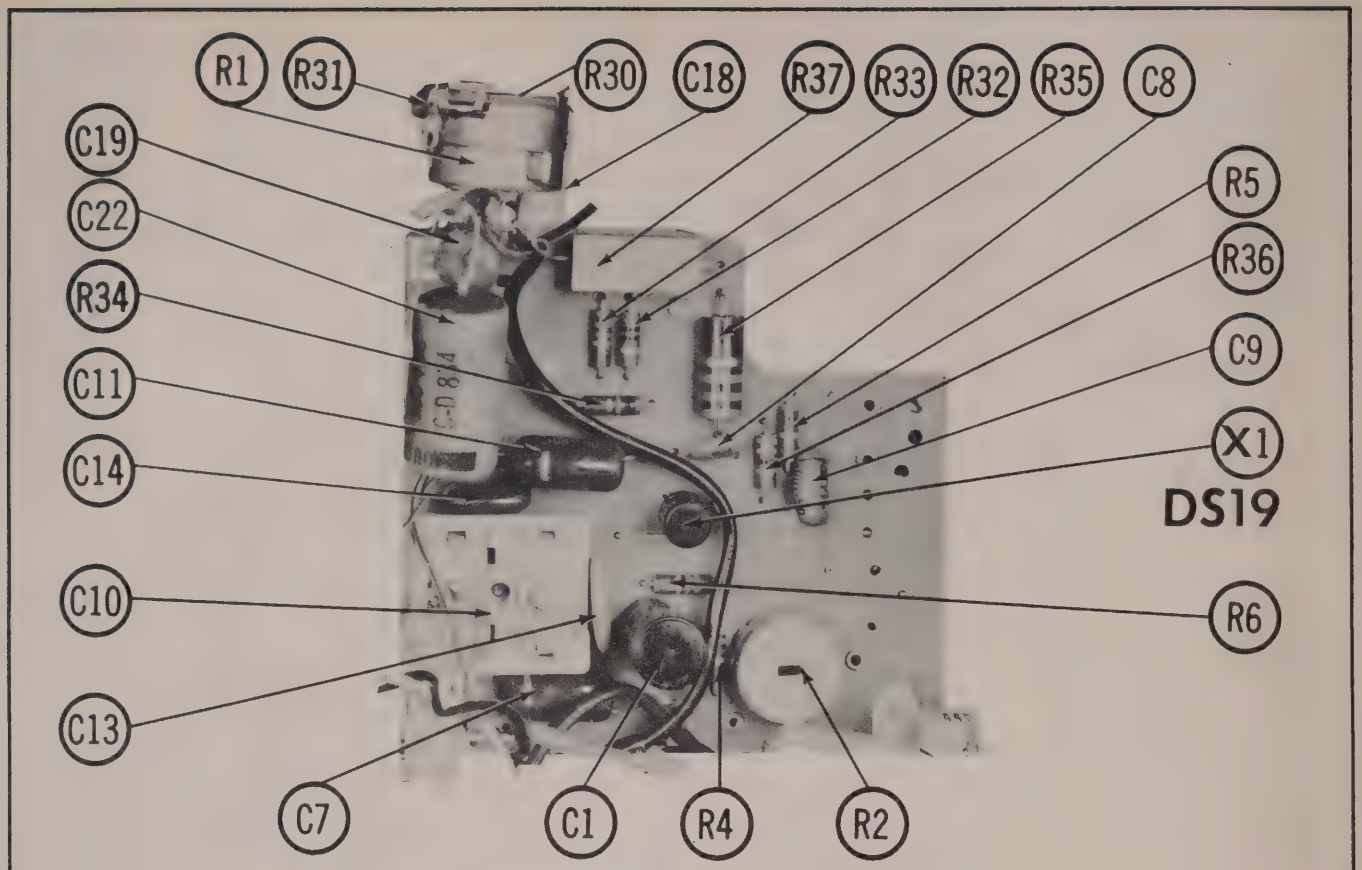
OLDSMOBILE
MODEL 989172

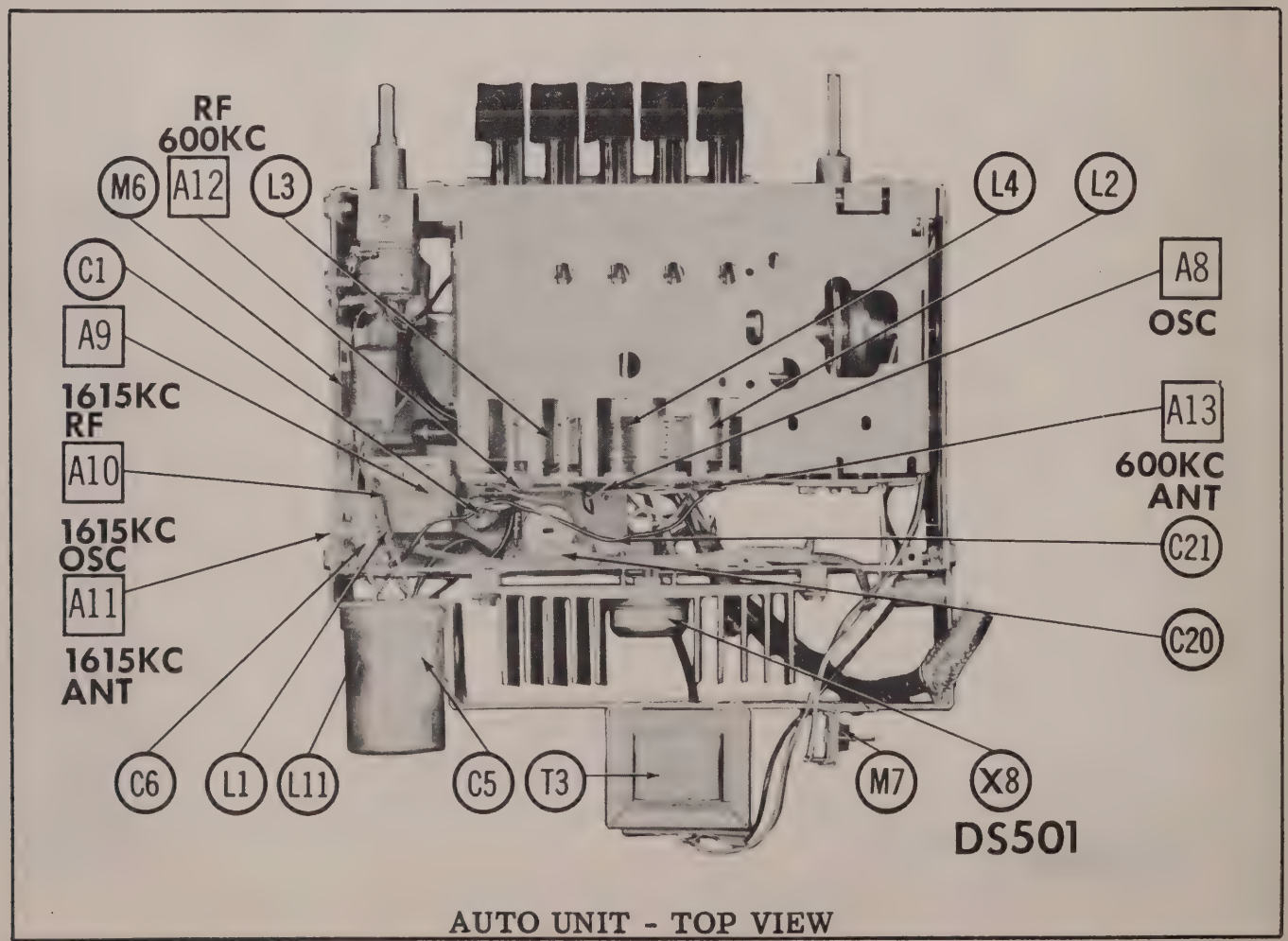


PORTABLE PRINTED BOARD - TOP VIEW

OLDSMOBILE
MODEL 989172



AUTO PRINTED BOARD - TOP VIEW



AUTO UNIT - TOP VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	DS-19	RF Amplifier					PNP
X2	DS-21	Converter			2N486		PNP
X3	DS-12	1st IF Amplifier					NPN
X4	DS-11	2nd IF Amplifier					NPN
X5	DS-16	Driver			2N362		PNP
X6	DS-14	Output			2N633		PNP) Matched
X7	DS-14	Output			2N633		PNP) Pair
X8	DS-501	Output					PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	20	8	7273794	PR2-020		PET2410		VLS-2195 *	
B	200	8							
C2	10	8	7273798	BCD10010	ECPB408	PET1340	ML10-15	VL-1127	
C3A	100	8	7274108	PR3-005		PET3400		VL-3320	
B	65	8							
C	100	8							
C4	10	8	7271255	PWE10010	EC10-10	TT12X10	ML10-15	TE-1114	①
C5A	1000	10	7273794	AFH2-75-50		WP200.23		TVLS-2163 *	②
B	1500	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Alternate Part #7273799
② Alternate Part #7270954. Versions having C5 mounted on printed board use 1000mfd@10V & 1000mfd@16V Part #7273793.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6				7274215						
C7	.05	50		7271670	P1123S-047	DDA-503	WMF1S47E	GTM-115	65P47352	
C8	27			7271876	DI-27	DD-270	L10T27	CNO-427	5GA-Q27	
C9	.001	50		7273792	P1123S-001	DM-102	WMF1D1E	GTM-115	65P10253	
C10A				7273797						
B										
C11	.05	50		7271670	P1123S-047	DDA-503	WMF1S47E	GTM-115	65P47352	
C12A	3300			7273803	BPD-0033	DD-332	BYA10D33	B-233	5HK-D33	
B	22000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C13	200		N470 5%	7271299						
C14	1800		5%	7273795	ADM-19-182		5A5D18		MS-218	
C15	10		5%	7270977	ADM-15-100	DTZ-10	22A5Q1	MCE215	MS-41	
C16	.01	50		7270975	P1123S-01	DM-103	WMF1S1E	GTM-111	65P10352	
C17	.01	50		7270975	P1123S-01	DM-103	WMF1S1E	GTM-111	65P10352	
C18	.1	100		6690	P1123S-1	DF-104	WMF1P1E	GTM-101	65P10452	
C19	.022	200		7271603	P2123S-022	DD-203	WMF2S22E	GTM-2122	65P22352	
C20	.1	100		6690	P1123S-1	DF-104	WMF1P1E	GTM-101	65P10452	
C21	.1	100		6690	P1123S-1	DF-104	WMF1P1E	GTM-101	65P10452	
C22	.47	100		6693	P1123S-47		WMF1P47E	GTM-1047	2EP-P50	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	5000Ω	1/2	7273986					Tone
B	1500Ω	1/2						Volume, Tap@180Ω
C	Switch							Off-On
R2	3000Ω	2(WW)	7273796					Bias, Stop@350Ω
R3A	10K	1/4						Volume (Portable)
B	Switch		7274634					Off-On (Portable)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	330Ω	
R5	1500Ω	
R6	510Ω	
R7	3900Ω	
R8	15K	
R9	3900Ω	
R10	56K	
R11	15K	
R12	4300Ω 5%	
R13	330Ω 5%	
R14	1000Ω 5%	
R15	3900Ω	

ITEM No.	RATING	REMARKS
R16	15K	
R17	270Ω	
R18	470Ω	
R19	3900Ω	
R20	15K	
R21	2200Ω	
R22	100Ω	
R23	510Ω 5%	
R24		(#7270782)Note 1
R25	12K	
R26	33K	
R27	33K	

ITEM No.	RATING	REMARKS
R28	4.7Ω	
R29	360Ω 5%	
R30	3300Ω	
R31	100Ω	
R32	10Ω	
R33	180Ω	
R34	200Ω	
R35	180Ω 5% 2W	
R36	33Ω	
R37	.47Ω	(#7270608)
R38	150Ω	

Note 1. Temperature Compensating.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DELCO PART No.	REPLACEMENT DATA
K1	IF Network	47000mmf, 47000mmf, 100000mmf 510Ω, 3900Ω, 10K	7273801	
K2	IF Network	47000mmf, 50000mmf, 100000mmf, 820Ω, 18K	7273802	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		DELCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	7255738	19-1004	19-1004	BC-565	4610		
L2	Ant. Tuning Coil	1221338						
L3	RF Tuning Coil	1221138						
L4	Osc. Tuning Coil	1221339						
L5	Loopstick	7274626						
L6	Osc. Coil	7273763						
L7	1st IF Trans.	7274341						
L8	2nd IF Trans.	7273760						
L9	3rd IF Pri.	7273761						
L10	3rd IF Sec.	7273762						

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L11	1A	.7Ω	.012 HY	7274011				TC-2		

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2, 3	1	7273764					TY-56X①	① Use Original Frame

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	150Ω CT	10Ω	7273765	TR112 ①				TR112①	TY-58X①	①Use Original frame
T3	9Ω	Tap ⓐ 3-4Ω	1221290							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	DELCO PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	7272810	69A3	① Alternate Part #7273926
SP2	3"	PM	12-14Ω	7273929 ①		

BATTERIES

ITEM No.	VOLTAGE	DELCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.3V			Z ①		E9N①		DM-9N①	① 4 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		DELCO PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2		DS-18	1N60	1N60	1N60	AVC (Pigtail)
M3		DS-18	1N60	1N60	1N60	Overload (Pigtail)
M4		DS-18	1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M5	Tuning Cap	7273835	2 Gang
M6	Spark Plate	7271564	
M7	Switch	7271425	Output Shorting
	Switch	1221295	Rear Speaker Shorting

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	7273747	Tuning, Portable
Knob	575091	Control, Car
Knob	7274400	Off-On, Volume, Portable
Knob	575476	Tone, Car
Knob	575477	Dummy, Car
Push Button	7272842	
Push Button Assy.	1221293	Includes Front Bearing Plate, Slides & Push Buttons
Pointer & Hub Assy.	7273746	Portable
Pointer Assy.	7272851	Car
Escutcheon	7272856	
Case	7273741	Front Plate, Portable
Case	7273545	Wraparound, Plastic Portable

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

PHOTOFACT* Folder

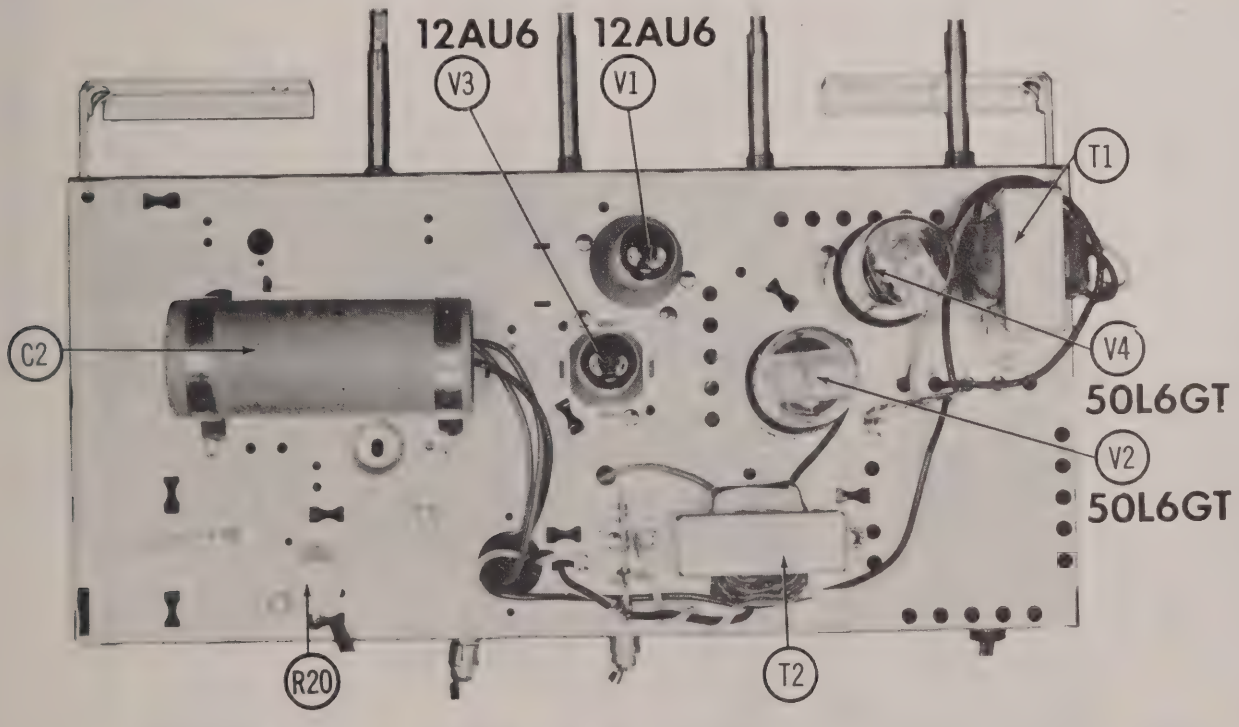
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

OLYMPIC
MODEL 654

OLYMPIC
MODEL 654

TRADE NAME	Olympic Model 654
MANUFACTURER	Olympic Radio & Tel. Inc., 34-01 38th Ave., Long Island City 1, N. Y.
TYPE SET	AC Operated 4 Tube Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 61 Watts, .58 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #RX626-1 — SEE SIMILAR ADMIRAL RC-637-1 — PHOTOFACT SET 398 FOLDER 7



OLYMPIC
MODEL 654

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JT285

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Channel A AF Amp.	12AU6
V2	Channel A Output	50L6GT
V3	Channel B AF Amp.	12AU6
V4	Channel B Output	50L6GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	40	150NP	CO3152	NP-PRS150VNP40	BR8035 †	TC492 †		TVAS-1413.1*	
C2A	60	350	CO25794	PR3-025	BBRT0235	WT-460	TD-60-350	TVA-1613	
B	60	350					TD-60-350	TVA-1613	
C	60	200	①						
C3	20	25	CO4651	SRE25V20	BBR10-25	TT25X20	ML20-25	TE-1206	
C4	20	25	CO4651	SRE25V20	BBR10-25	TT25X20	ML20-25	TE-1206	
C5	20	25	CO4651	SRE25V20	BBR10-25	TT25X20	ML20-25	TE-1206	
C6	20	25	CO4651	SRE25V20	BBR10-25	TT25X20	ML20-25	TE-1206	

① Not used.
* Not normally found in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C7	330		10%	CCE331K	DI-330	D6-331	L10T33	JL-330	MS-333	
C8	.047	400		COB4473	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C9	.05	50		CO4765-1	P288N-05	DF-503	CUB2S5	TA-150	TG-S50	①
C10	.047	400		COB4473	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C11	330		10%	CCD331K	DI-330	D6-331	L10T33	JL-333	MS-333	
C12	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C13	.0047	400		COH4472	P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C14	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C15	.047	400		COB4473	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C16	.05	50		CO4765-1	P288N-05	DF-503	CUB2S5	TA-150	TG-S50	①
C17	.047	400		COB4473	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C18	.22	400		COH4224	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C19	330		10%	CCD331K	DI-330	D6-331	L10T33	JL-333	MS-333	
C20	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C21	.0047	400		COH4472	P488N-0047	D6-472	CUB6D47	GEM-6247	6Tm-D47	
C22	.047	400		COB4473	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C23	.047	400		COB4473	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	①
C24	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C25	2.2mfd	3			P292ZN-2		WMF1W2E	GTM-12	HY150	
C26	2.2mfd	3			P292ZN-2		WMF1W2E	GTM-12	HY150	

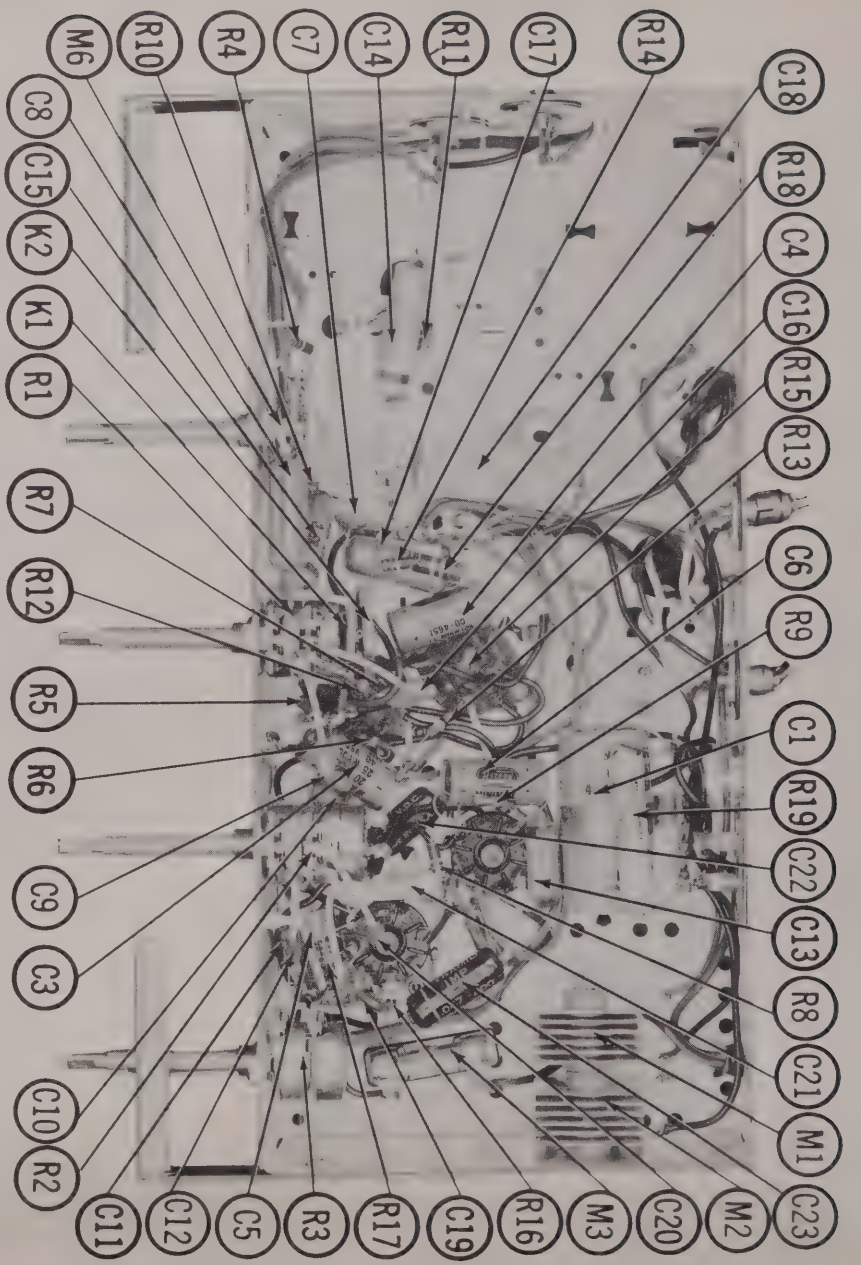
① Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg *		PT25963				UE1726	Loudness, Channel A
B	1meg *						Not Req.	Loudness, Channel B
R2A	500K †		PT25961				UE1727S	Treble, Channel A
B	500K †						Not Req.	Treble, Channel B
C	Switch						Not Req.	Off-On
R3A	1meg		PT25962				UE1728	Bass, Channel A
B	1meg						Not Req.	Bass, Channel B

* Taps @ 350K and 700K
† Tap @ 200K

CHASSIS BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	220K	
R5	470K	
R6	100K	
R7	470Ω	
R8	470K	
R9	180Ω	

ITEM No.	RATING	REMARKS
R10	220K	
R11	220K	
R12	470K	
R13	100K	
R14	220K	
R15	470Ω	

ITEM No.	RATING	REMARKS
R16	470K	
R17	180Ω	
R18	22K 1W	
R19	75Ω 10W	#RE26074
R20	740Ω 20W	#RE25939

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA
K1	Channel A Loudness Comp.	50mmf, 100mmf, 2500mmf, 2500mmf, 100K, 100K	PC25420	Centralab PC-325 Sprague DT-5
K2	Channel B Loudness Comp.	50mmf, 100mmf, 2500mmf, 2500mmf, 100K, 100K	PC25420	Centralab PC-325 Sprague DT-5

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5300Ω	6-8Ω	TR25922	24S64	A-2901	AU-604	A-3823	24S64	S-53X	
T2	5500Ω	6-8Ω	TR26020	24S60	A-2900	AU-608	A-3856	24S60	S-51X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLYMPIC PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	SK1906	8A31	
SP2	3½"	PM	3-4Ω	SK25463	3A15T	
SP3	8"	PM	3-4Ω	SK1906	8A31	
SP4	3½"	PM	3-4Ω	SK25463	3A15T	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	OLYMPIC PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.086A	RF3160 ①	1235AH①	T150 ①	150 ①		① Selenium Type
M2	.086A	RF3160 ①	1235AH①	T150 ①	150 ①		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			OLYMPIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG	1A 250 V	FU5285		312001 (3AG 1A 250V)	357001	AGC 1	4406

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	OLYMPIC PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M4		13T	Not Req	66 *	Not Req			* Use PT-3 Mount

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	OLYMPIC PART No.	JENSEN PART No.	WALCO PART No.	
M5	(78 RPM)	E98 † or E98D ♦		† Jewel ♦ Diamond
	(LP)	E98 X † or E98XD ♦		

MISCELLANEOUS

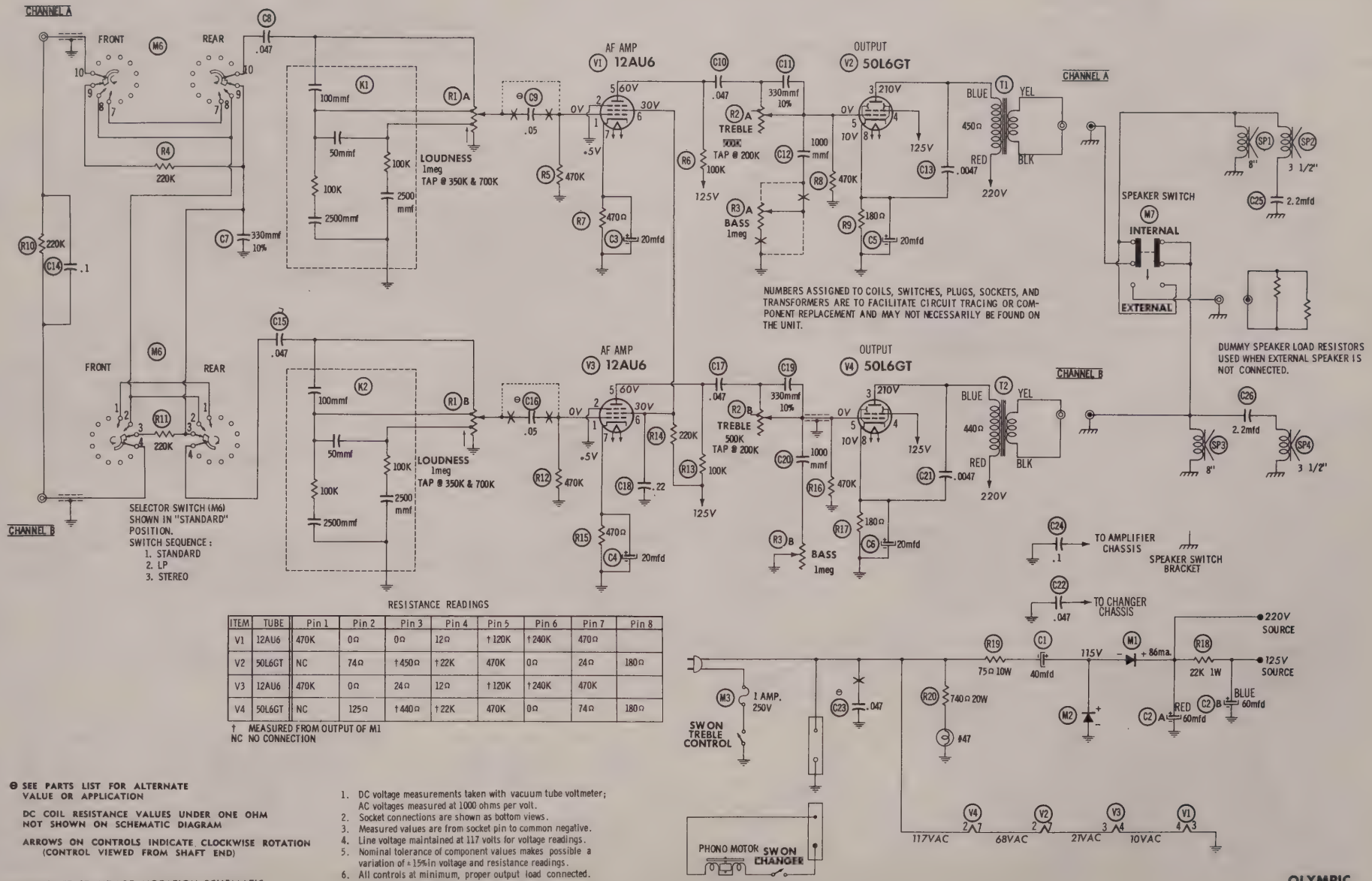
ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M6	Switch	SW2689	Selector
M7	Switch		Speaker, (DPDT, Slide Type)

CABINETS & CABINET PARTS

When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	12AU6	470K	0Ω	0Ω	12Ω	†120K	†240K	470Ω	
V2	50L6GT	NC	74Ω	†450Ω	†22K	470K	0Ω	24Ω	180Ω
V3	12AU6	470K	0Ω	24Ω	12Ω	†120K	†240K	470K	
V4	50L6GT	NC	125Ω	†440Ω	†22K	470K	0Ω	74Ω	180Ω

† MEASURED FROM OUTPUT OF M1
NC NO CONNECTION

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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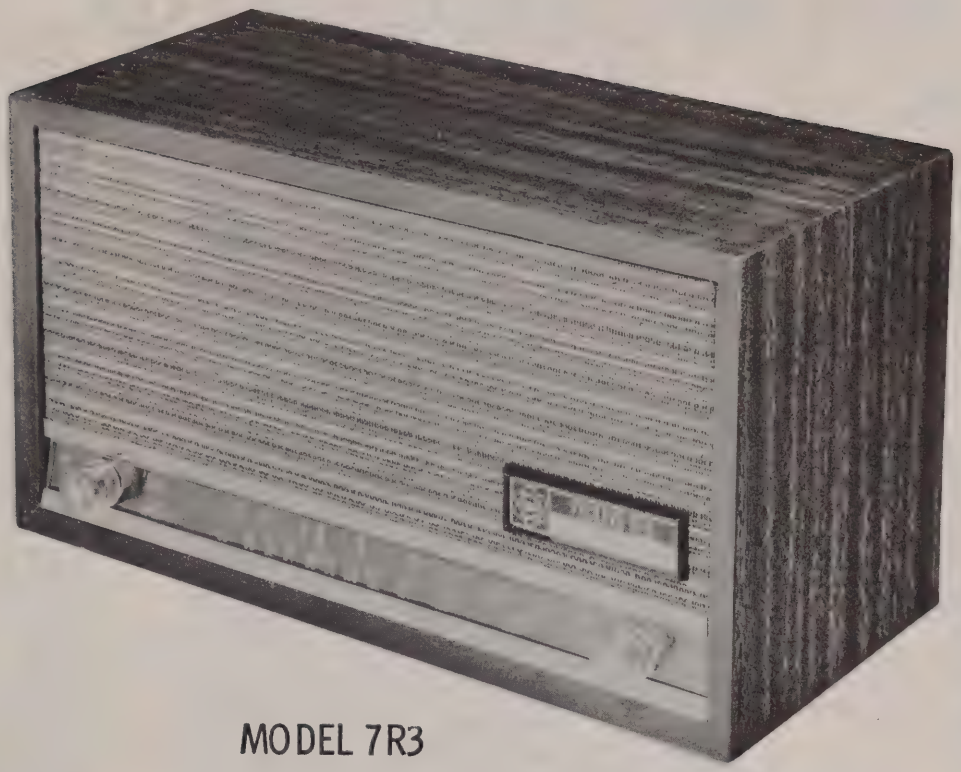
OLYMPIC MODEL 654

PHOTOFACT* Folder

PACKARD-BELL MODELS
7R2, 7R3 (Ch. 7R2)

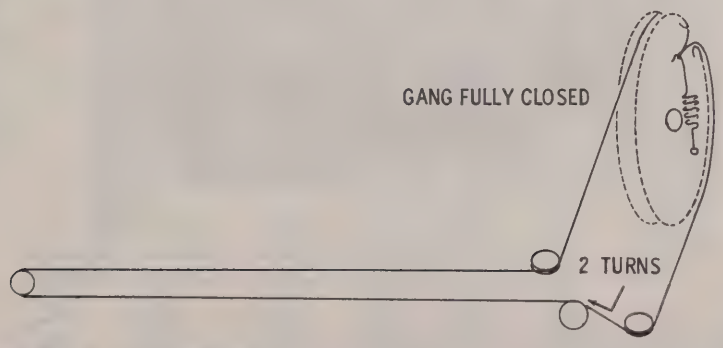


MODEL 7R3

PACKARD-BELL MODELS
7R2, 7R3 (Ch. 7R2)

TRADE NAME	Packard-Bell Models 7R2, 7R3 (Ch. 7R2)		
MANUFACTURER	Packard-Bell Electronics Corp., Service Div., 1920 S. Figueroa St., Los Angeles 7, California		
TYPE SET	AC-DC Operated 7 Tube FM-AM Receiver		
POWER SUPPLY	110-120 Volts AC-DC	RATING	28 Watts, .33 Amp. @ 117 Volts AC
TUNING RANGE	BROADCAST 530 - 1620KC	FREQ. MOD.	88 - 108MC

DIAL CORD STRINGING



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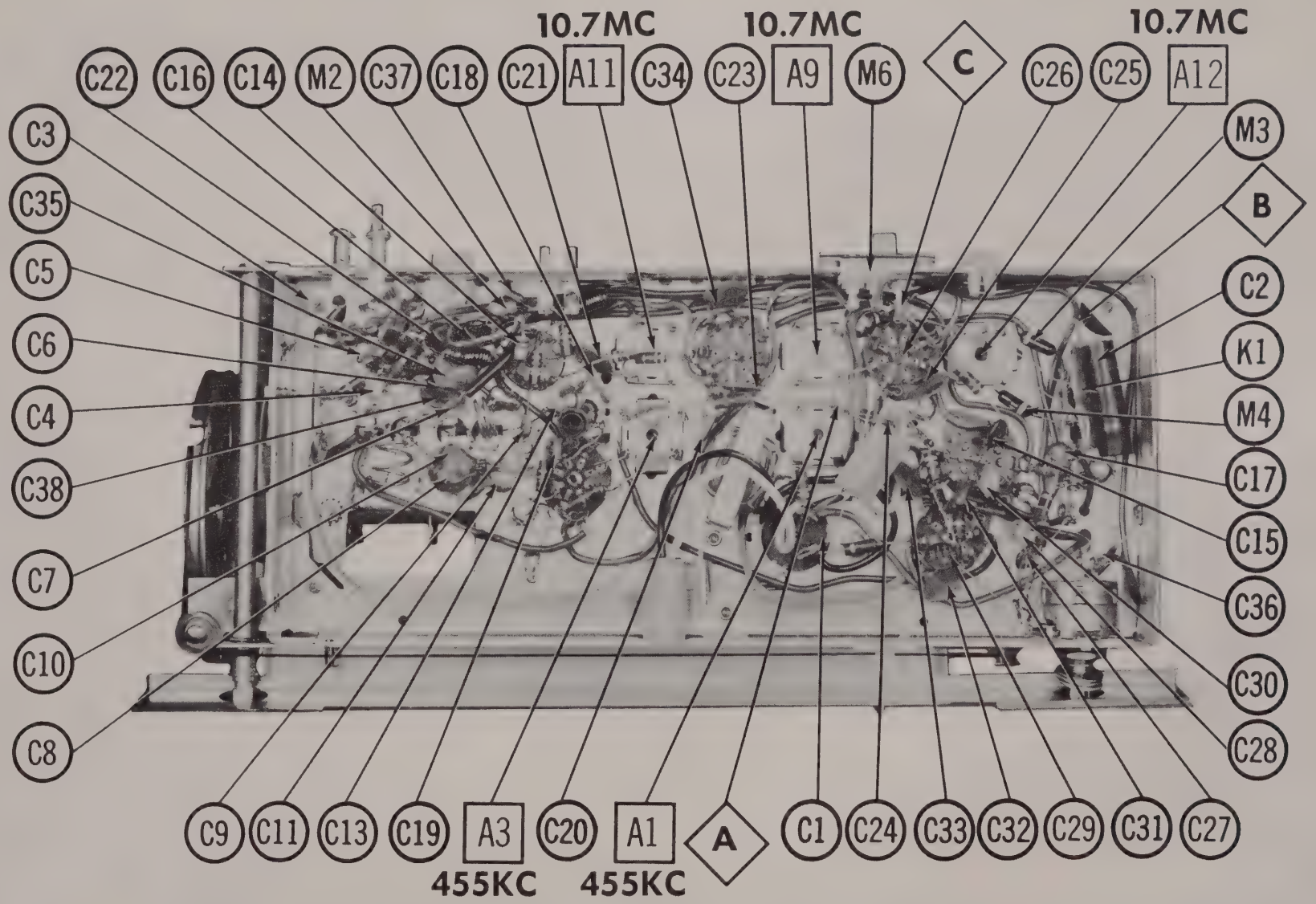
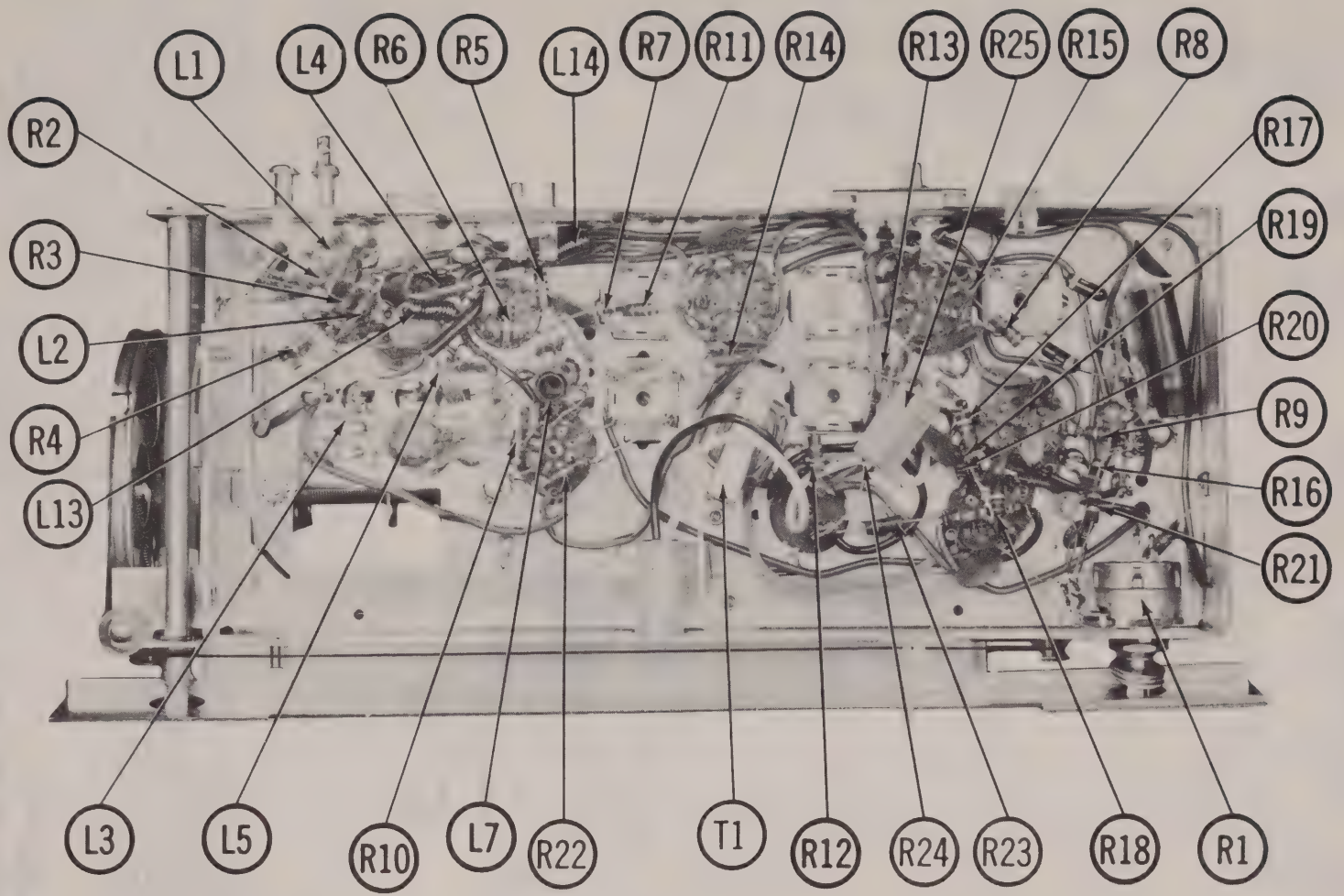
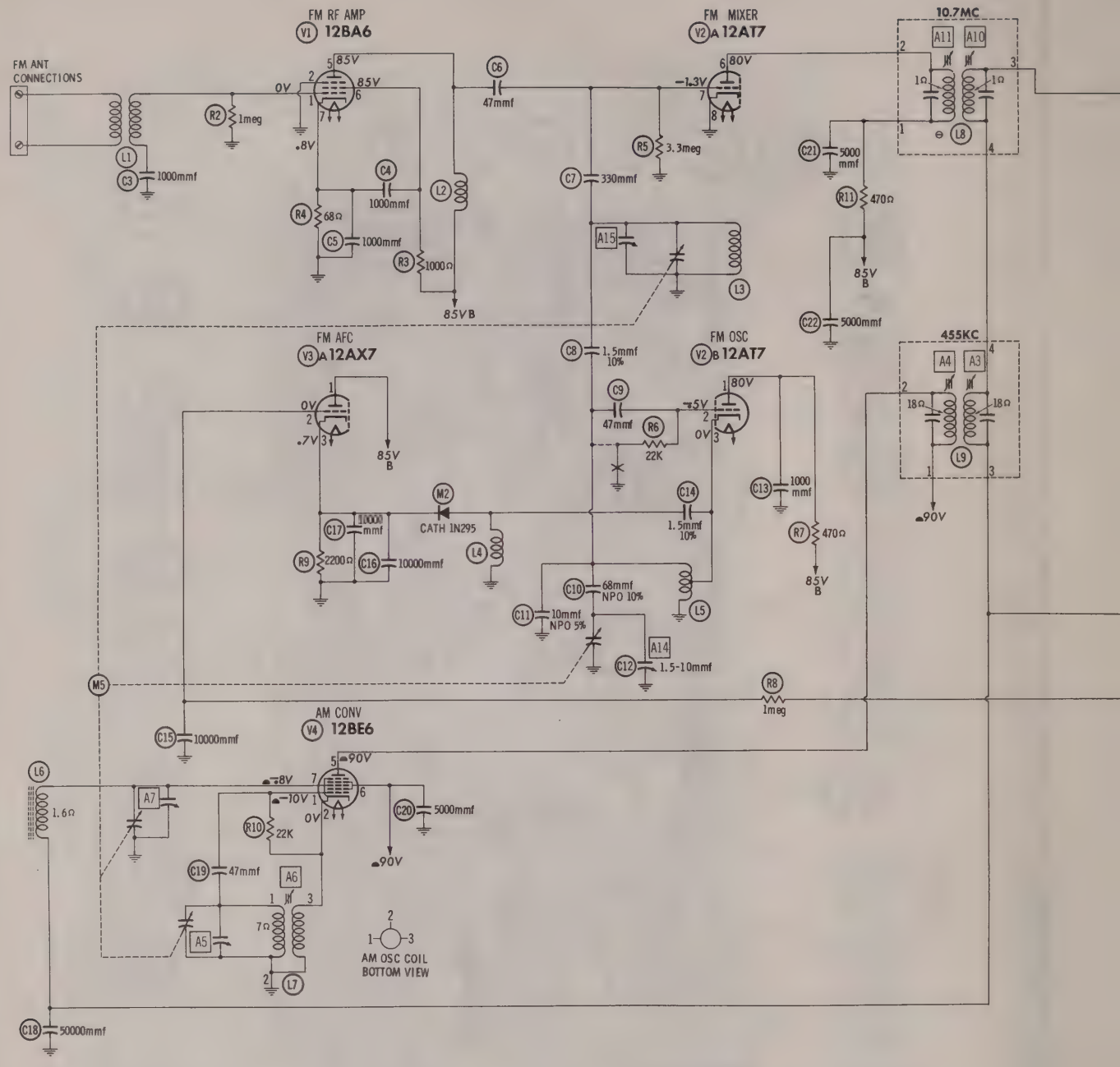
SET 463 FOLDER 10



CHASSIS BOTTOM VIEW — ALIGNMENT, CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW – RESISTOR & INDUCTOR IDENT.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BA6	1meg	0Ω	42Ω	54Ω	†1100Ω	†2100Ω	68Ω		
V2	12AT7	†1600Ω	22K	0Ω	42Ω	30Ω	†1600Ω	3.3meg	0Ω	36Ω
V3	12AX7	†1100Ω	1meg	1000Ω	0Ω	12Ω	†220K	4.7meg	0Ω	6Ω
V4	12BE6	•22K	•.5Ω	54Ω	66Ω	•†2100Ω	•†2100Ω	•2.7meg		
V5	6BJ6	2.7meg	0Ω	30Ω	24Ω	†1600Ω	†1600Ω	0Ω		
V6	12AU6	470K	0Ω	24Ω	12Ω	†1600Ω	†1600Ω	0Ω		
V7	50EH5	68Ω	470K	120Ω	66Ω	470K	†1100Ω	†300Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1.
• MEASURED IN "AM" POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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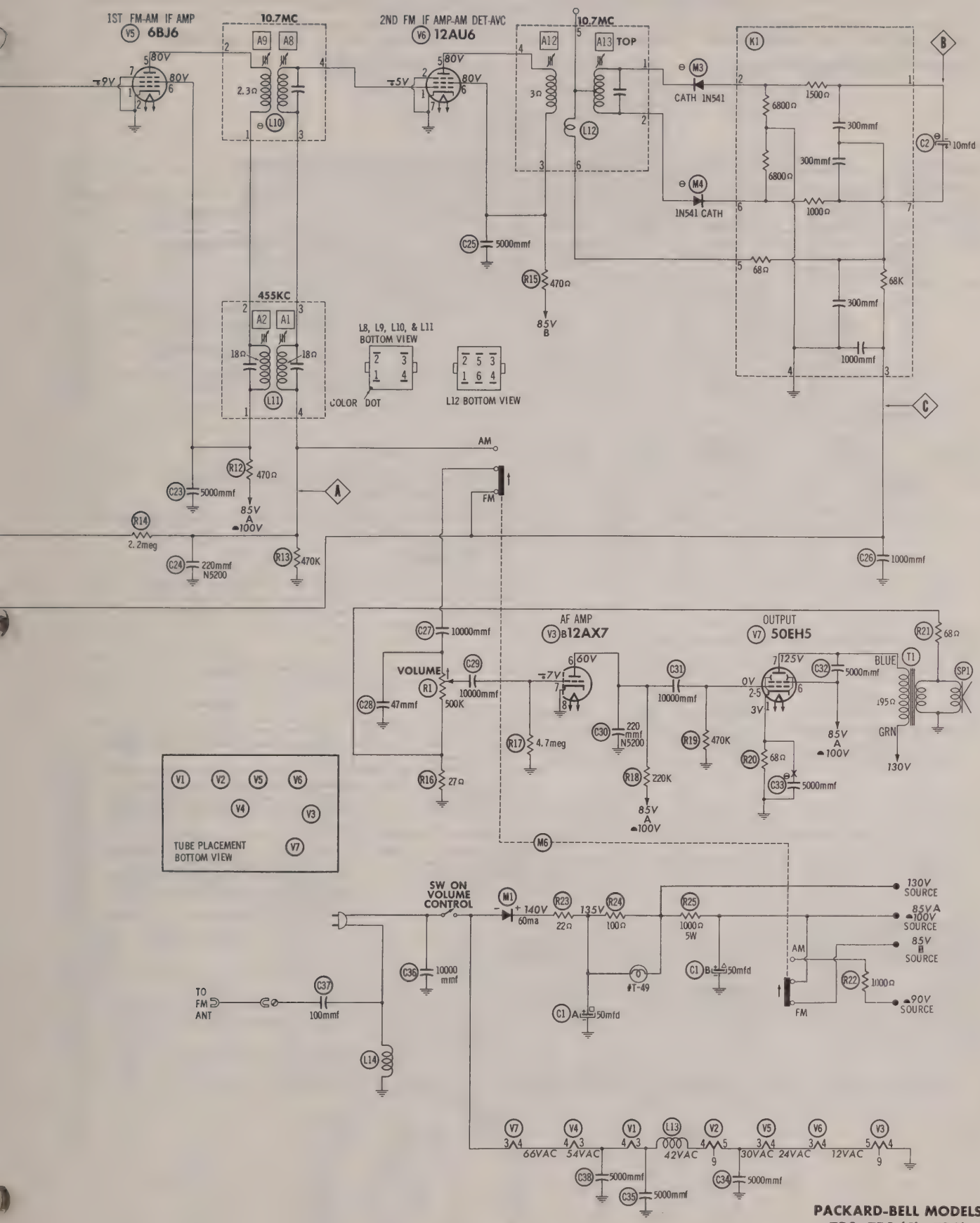


PACKARD-BELL MODELS 7R2, 7R3 (Ch. 7R2)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Defeat the AFC.

Suggested Alignment Tools:
- A1 thru A4 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987; WALSCO #2531
- A5, A7, A14, A15 ... GENERAL CEMENT #5004, 5008, 5009; WALSCO #2520
- A6, A12, A13 ..... GENERAL CEMENT #8606, 8606L, 8282, 9295; WALSCO #2526, 2543, 2544, 2545
- A8 thru A11 ..... GENERAL CEMENT #8721, 8722; WALSCO #2519

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	AM	Tuning gang fully open	DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	1620KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	530KC	"	Tuning gang fully closed	"	A6	Adjust for maximum deflection. Repeat steps 2 and 3.
4.		"	1500KC	"	1500KC signal	"	A7	Adjust for maximum deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01mfd	High side to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	FM	88MC	DC probe to point (A). Common to chassis.	A8, A9, A10, A11	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A12	"
7.	"	"	"	"	"	DC probe to point (C). Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01mfd	High side to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp.)	FM	88MC	Vert. Amp. to point (A). Low side to chassis.	A8, A9, A10, A11	Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown.
6.	"	"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A12	Disconnect stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown.
7.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A13	Reconnect C2. Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Two 150Ω Carbon Resistors	Across FM antenna terminals with 150Ω in each lead.	106MC (Unmod.)	FM	106MC	DC probe to point (B). Common to chassis.	A14, A15	Adjust for maximum deflection.
9.	"	"	92MC	"	92MC	"	L3, L5	"

FIG. 1

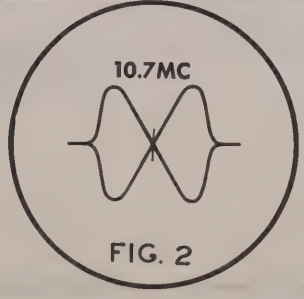


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier	12BA6
V2	FM Osc. - FM Mixer	12AT7
V3	FM AFC - AF Amp.	12AX7
V4	AM Converter	12BE6
V5	1st FM - AM IF Amp.	6BJ6
V6	2nd FM IF Amplifier-AM Det. - AVC	12AU6
V7	Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP	RATING VOLT.	REPLACEMENT DATA Packard-Bell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150	24171	AFH2-16	XB0161	FP214	TMD-13	TVL-2435	
B	▲50	150							
C2	10	50		SRE50V10	NLW10-50	TT50X10	ML10-50	TE-1304	①

① Part 24164, 5mfd @ 50V may be used in some versions.

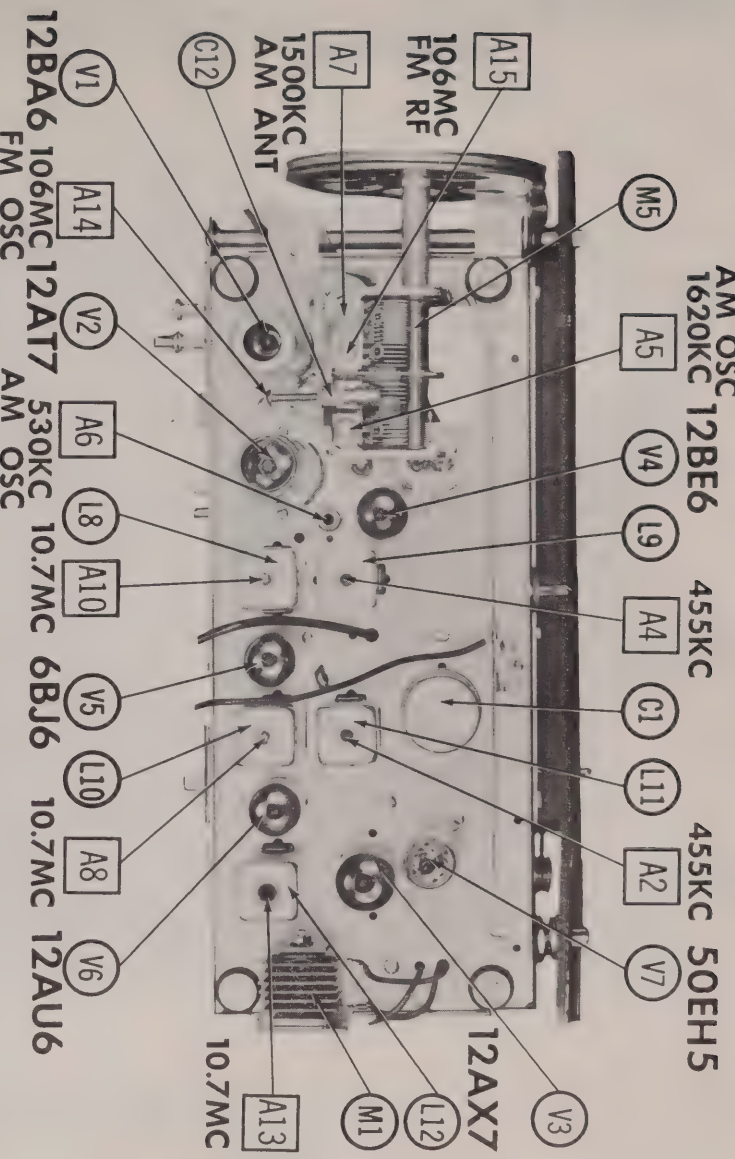
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	1000			23860	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C4	1000			23860	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C5	1000			23860	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C6	47			23912	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C7	330			23944	BPD-00033	DD-331	L10T33	B-333	5GA-T33	
C8	1.5		10%	23866	NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15S 10%*	
C9	47			23912	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C10	68		NPO 10%	23992	NPO-DI 68	DTZ-68	C10Q68C	CNO-468	5TCC-Q68S 10%*	
C11	10		NPO 5%	23927	NPO-SI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 5% *	
C12	1.5-10			23430		829-10				
C13	1000			23860	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C14	1.5		10%	23866	NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15S 10%*	
C15	10000			23612	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C16	10000			23612	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	10000			23612	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C18	50000			23614	BPD-05	DA-503	H-05S5	TA-150	5HK-S5	
C19	47			23912	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C20	5000			23931	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C21	5000			23931	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C22	5000			23931	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C23	5000			23931	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C24	220		N5200	23915						
C25	5000			23931	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C26	1000			23860	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C27	10000			23612	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C28	47			23912	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C29	10000			23612	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C30	220		N5200	23915						
C31	10000			23632	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C32	5000			23931	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C33	5000			23931	BPD-005	DD-502	BYA10D5	B-220	5HK-D5	①
C34	5000			23931	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C35	5000			23931	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C36	10000			23632	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C37	100			23914	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C38	5000			23931	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Not used in early production.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Packard-Bell PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	25073A	B-60-S	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1meg	
R3	1000Ω	
R4	68Ω	
R5	3.3meg	
R6	22K	
R7	470Ω	
R8	1meg	
R9	2200Ω	

ITEM No.	RATING	REMARKS
R10	22K	
R11	470Ω	
R12	470Ω	
R13	470K	
R14	2.2meg	
R15	470Ω	
R16	27Ω	
R17	4.7meg	

ITEM No.	RATING	REMARKS
R18	220K	
R19	470K	
R20	68Ω	
R21	68Ω	
R22	1000Ω	
R23	22Ω	
R24	100Ω	
R25	1000Ω 5W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Packard-Bell PART No.	REPLACEMENT DATA
K1	Ratio Detector Network	300mmf, 300mmf, 300mmf, 1000mmf, 68Ω, 1000Ω, 1500Ω, 6800Ω, 6800Ω, 68K	23627A	Centralab PC-342

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Packard-Bell PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Antenna Coil	29426						
L2	RF Choke	29124	19-1000	19-1000	BC-561	4602		luh
L3	FM Osc. Coil	29165						
L4	RF Choke	29124	19-1000	19-1000	BC-561	4602		luh
L5	FM Osc. Coil	29243						
L6	Loopstick	29360A						
L7	AM Osc. Coil	29244			BC-393	71 OSC		
L8	1st FM IF	29164	16-3487	16-3487	FM-254	1463		①
L9	1st AM IF	29077	16-6758	16-6758	BC-352	12-C1	RF-1	
L10	2nd FM IF	29167	16-3487	16-3487	FM-254	1463		②
L11	2nd AM IF	29078	16-6758	16-6758	BC-353	12-C2	RF-2	
L12	Ratio Detector	29084	17-3498	17-3498	FM-255	1465		
L13	Fil. Choke	29169	19-1000	19-1000	BC-561	4602		luh
L14	Line Choke	29169	19-1000	19-1000	BC-561	4602		luh

① Alternate Part #29148.

② Alternate Part #29152.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2600Ω	3-4Ω	89417A	26S58	A-3025	AU-605	A-3332	26S58	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Packard-Bell PART No.	QUAM PART No.	
SP1	4" x 6"	PM	3-4Ω	83122	46A1	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Packard-Bell PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.060A	72047 ①	1235AH ①	RS100 ①	100A ①	SR200 ②	① Selenium Type ② Silicon Type

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Packard-Bell PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N295	72028	1N60	1N60	1N295	AFC (Pigtail)
M3	1N541	72027 *	1N60	1N60	1N295	Ratio Det. (Pigtail)
M4	1N541		1N60	1N60	1N295	Ratio Det. (Pigtail)

* Matched Pair

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M5	Tuning Cap.	23558C	2 Gang Ant. 31-328mmf
M6	Switch	86712	FM-AM (DPDT, Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52227	Tuning, Volume
Pointer	67045B	
Dial	38173	Model 7R2
Dial	38181	Model 7R3

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PHILCO MODELS G-1706, S, G-1707, S, RT-150, SA-1500

PHILCO MODELS G-1706, S, G-1707, S, RT-150, SA-1500

PHILCO MODELS G-1706, S, G-1707, S, RT-150, SA-1500

MODEL G-1707S

TRADE NAME	Philco Models G-1706, G-1706S, G-1707, G-1707S, SA-1500 (CH. RT-150 FM-AM Tuner)
MANUFACTURER	Philco Corp., Tioga & "C" Streets, Philadelphia, Pa.
TYPE SET	AC Operated 6 Tube FM-AM Tuner, 4 Tube Amplifier And 4 Speed Automatic Record Changer (Tuner Used In G-1707 And G-1707S Only)
POWER SUPPLY	105-120 Volts AC, 60 Cycles RATING 95 Watts, .9 Amp. @ 117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	540—1620KC FREQ. MOD. 88—108MC

FOR SERVICE INFORMATION ON RECORD CHANGER M-41 - SEE SIMILAR V-M 1200A - PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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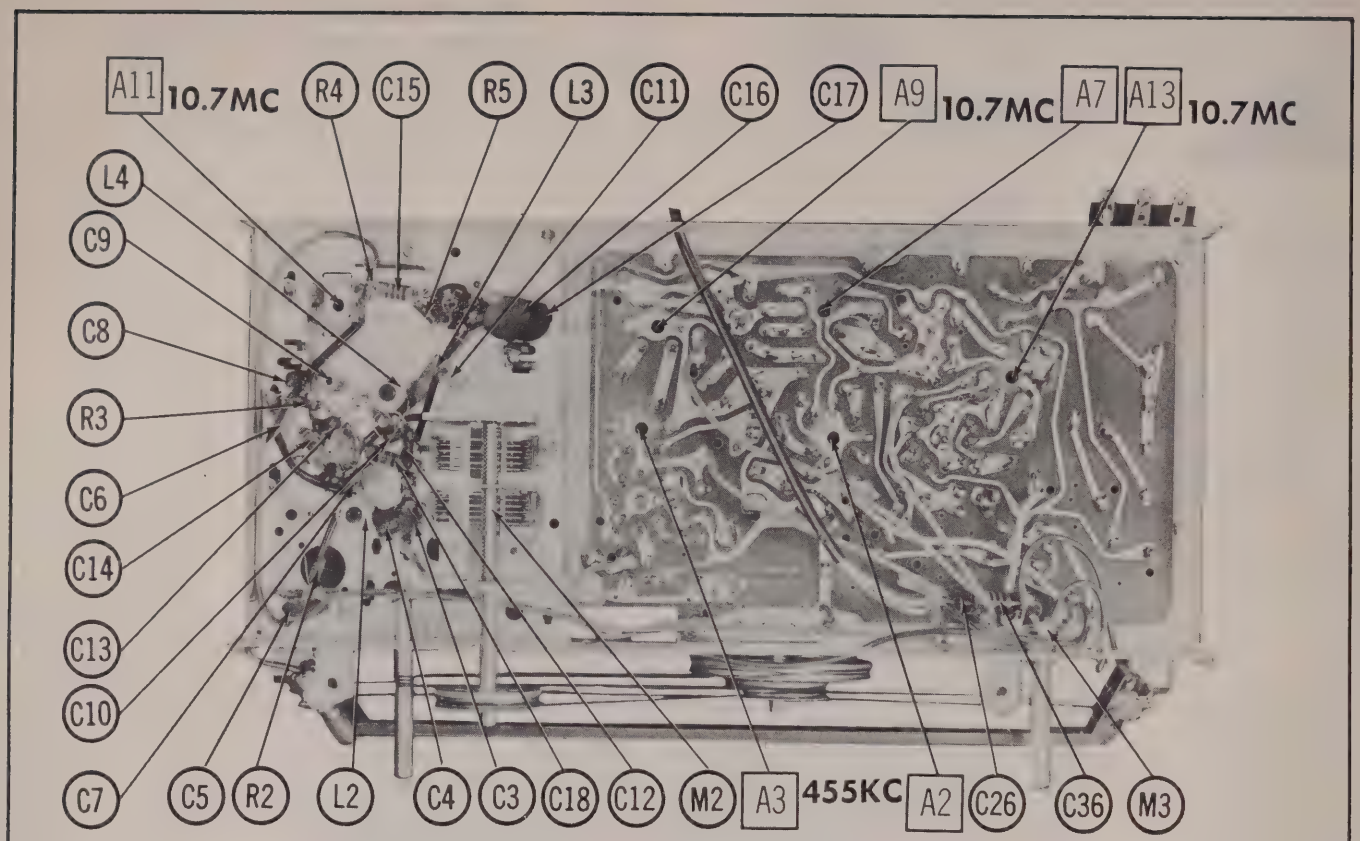
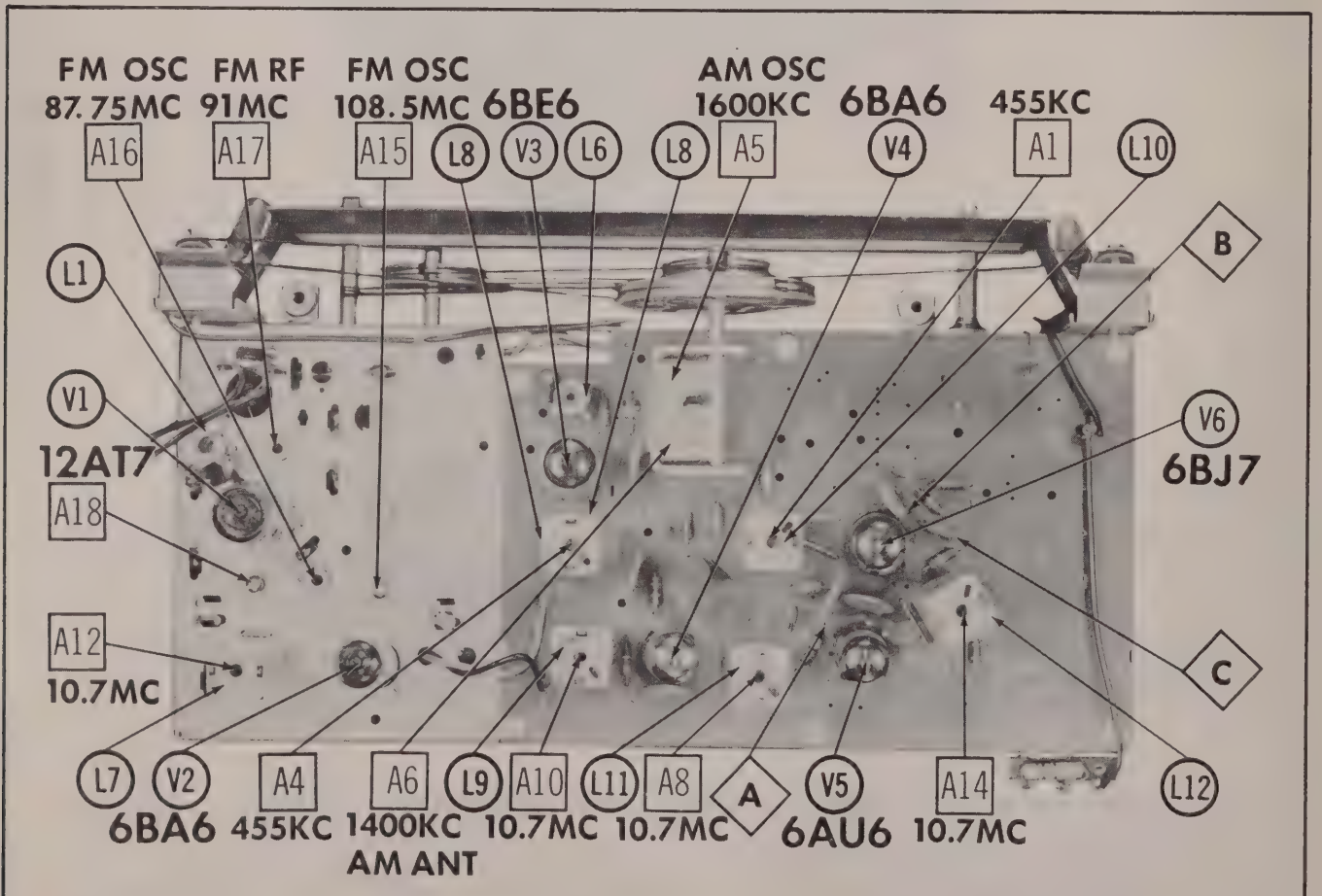
JN344

DATE 11—59 SET 463 FOLDER 11

SET 463 FOLDER 11



TUNER CHASSIS-BOTTOM VIEW



TUNER CHASSIS TOP VIEW-ALIGNMENT, INDUCTOR & TUBE IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
To set pointer, turn tuning capacitors fully closed and set pointers at 540KC & 88MC. Set Function switch in "Radio Tuner" position.
Suggested alignment tools: A1 thru A4.....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A5, A6, A15.....GENERAL CEMENT #5097, 8727
WALSCO #2515
A7 thru A14, A16, A17....GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
1.	.05mfd	High side to pin 7 (grid) AM Converter. Low side to chassis.	455KC (400~ Mod.)	AM	Tuning gang fully open	Across Output plug	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1600KC	"	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	Tune to 1400KC Signal	"	A6	Adjust for maximum output while rocking tuning gang.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.		High side to pin 7(cathode) of FM RF Amp. Low side to chassis.	10.7MC (Unmod.)	FM	Tuning gang fully open	DC probe thru 100K to point (A). Common to chassis.	A7, A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.		"	"	"	"	DC probe thru 100K to point (C). Common to chassis.	A13	"
6.		"	"	"	"	DC probe thru 100K to point (B). Common to chassis.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 300KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.		High side to pin 7(cathode) of FM RF Amp. Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully open	Vert. amp. thru 100K to point (A). Low side to chassis.	A7, A8, A9, A10, A11, A12	Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown.
5.		"	"	"	"	Vert. amp. thru 100K to point (C). Low side to chassis.	A13	"
6.		"	"	"	"	Vert. amp. thru 100K to point (B). Low side to chassis.	A14	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	270Ω Carbon Resistor	Across FM antenna terminals.	108.5MC (Unmod.)	FM	Insert a .006" non-metalic shim between rotor & stator. Open gang on shim.	DC probe thru 100K to point (B). Common to chassis.	A15	Adjust for maximum output.
8.	"	"	87.75MC	"	Tuning gang fully closed.	"	A16	"
9.	"	"	91MC	"	91MC	"	A17	"

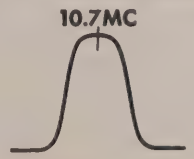
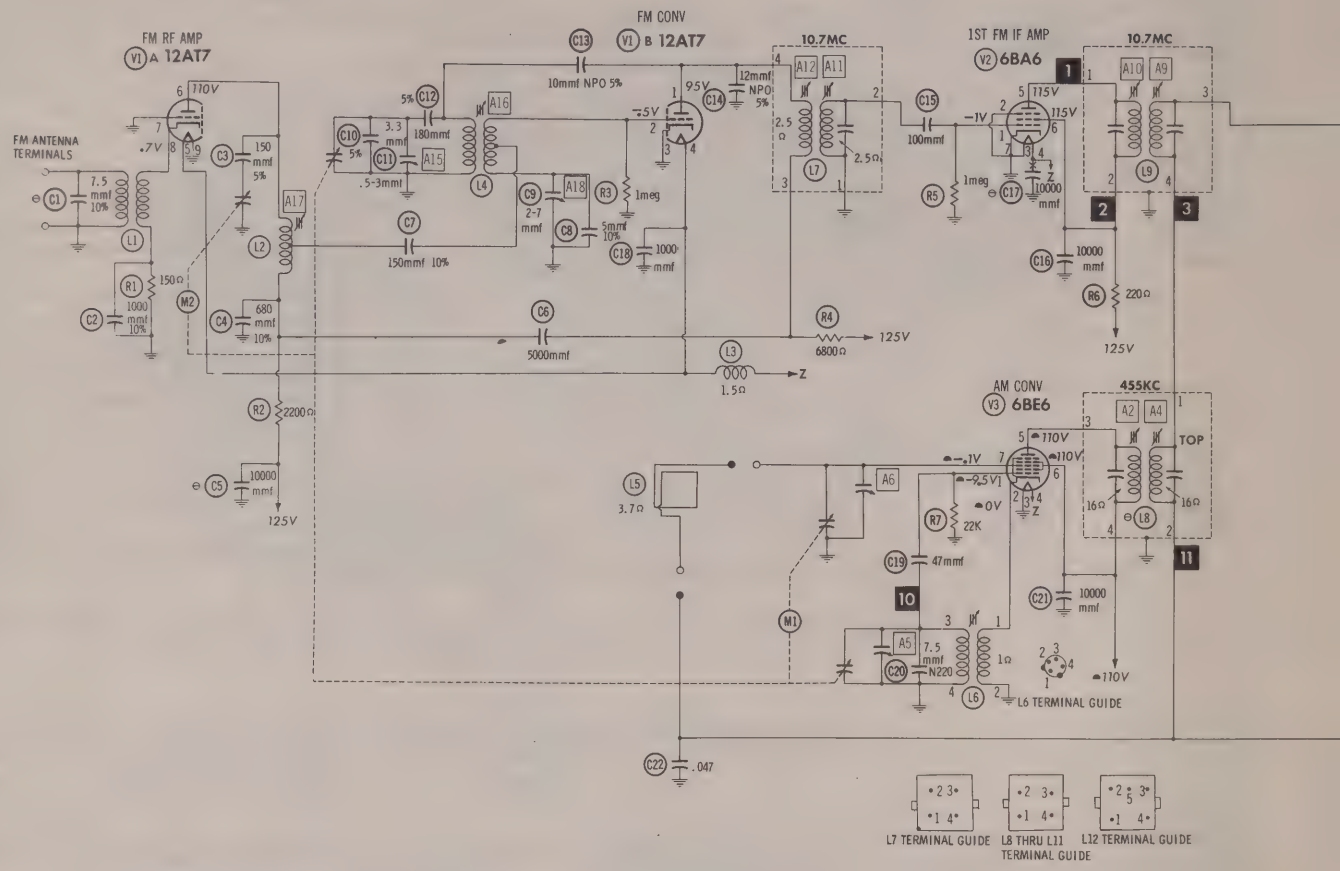


FIG. 1

FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AT7	†12K	1meg	0Ω	1Ω	1Ω	†7200Ω	0Ω	150Ω	0Ω
V2	6BA6	1meg	0Ω	0Ω	.1Ω	†5700Ω	†5700Ω	0Ω		
V3	6BE6	▲22K	▲1.1Ω	0Ω	.1Ω	▲†5500Ω	▲†5500Ω	▲2.7meg		
V4	6BA6	2.7meg	0Ω	.1Ω	0Ω	†5700Ω	†5700Ω	68Ω		
V5	6AU6	100K	0Ω	.1Ω	0Ω	†20K	†20K	0Ω		
V6	6BJ7	44K	22K	0Ω	0Ω	.1Ω	520K	0Ω	22K	0Ω
V7	12AX7	†280K	220K	2700Ω	280Ω	†280K	†280K	1meg	2700Ω	280Ω
V8	6V6GT	NC	280Ω	†330Ω	†1500Ω	470K	NC	280Ω	270Ω	
V9	6V6GT	NC	280Ω	†330Ω	†1500Ω	0Ω	TP	280Ω	270Ω	
V10	5Y3GT	NC	¶	NC	105Ω	NC	100Ω	TP	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM PIN 2 OF V10
▲ MEASURED IN "AM" POSITION
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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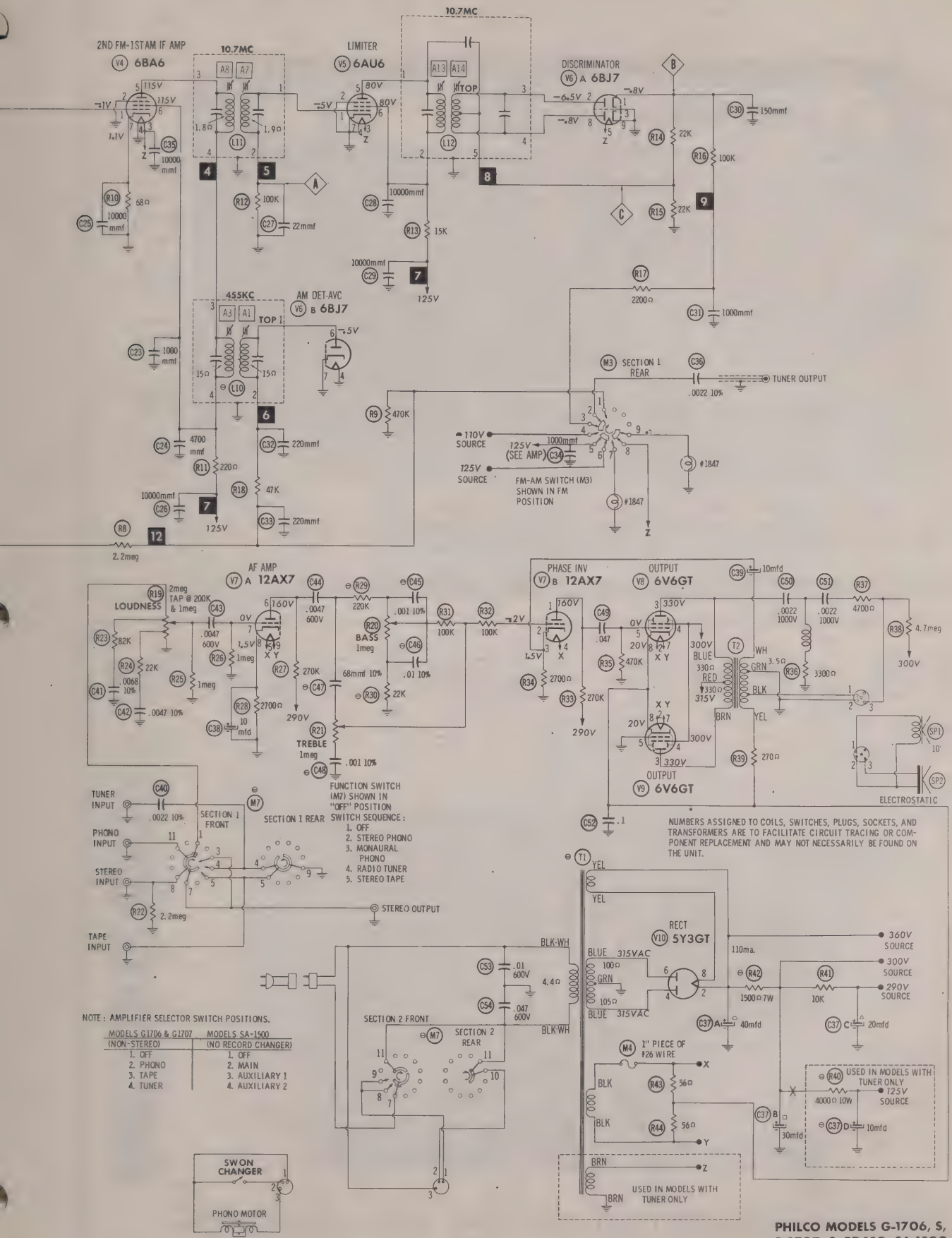
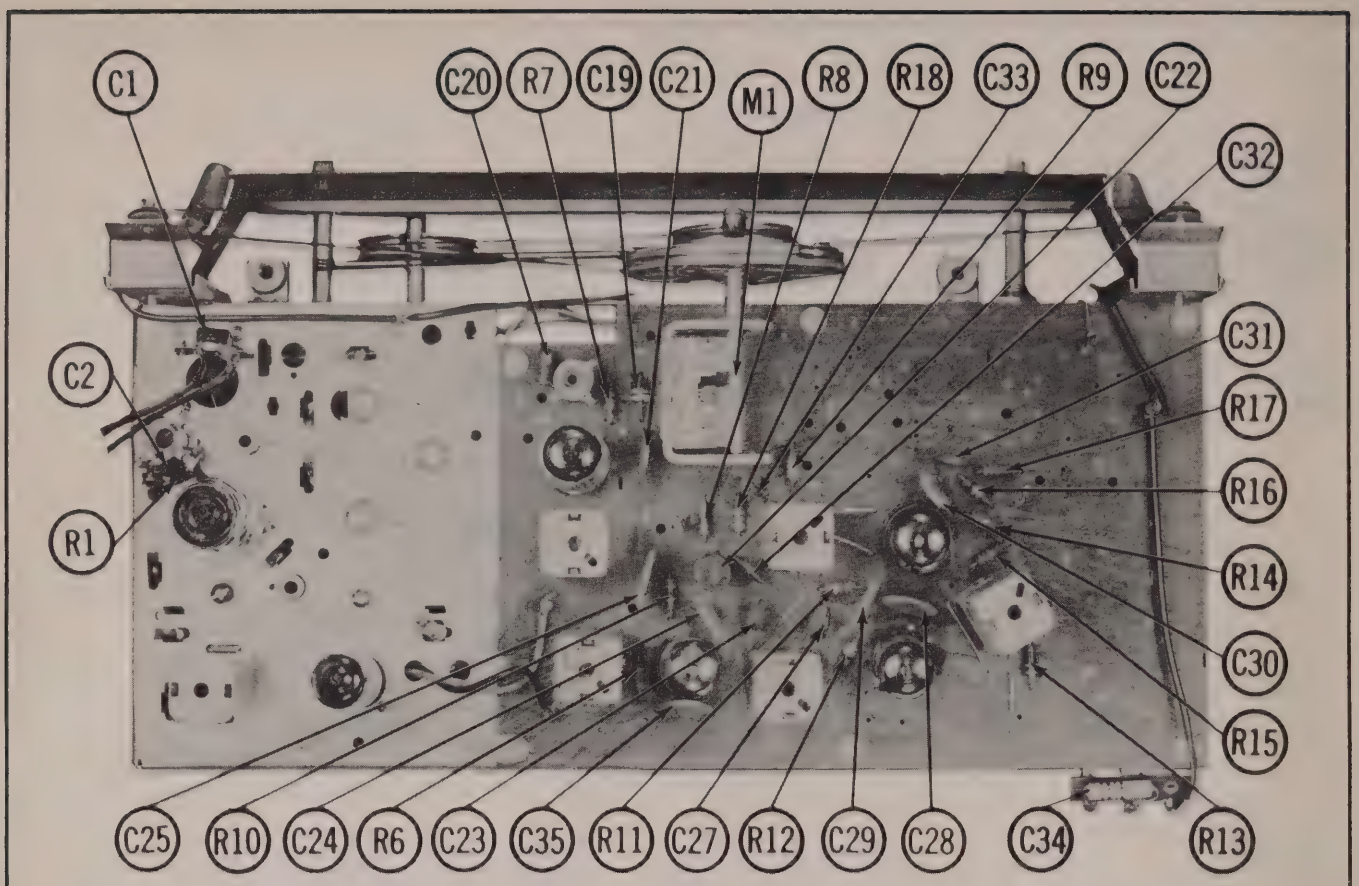


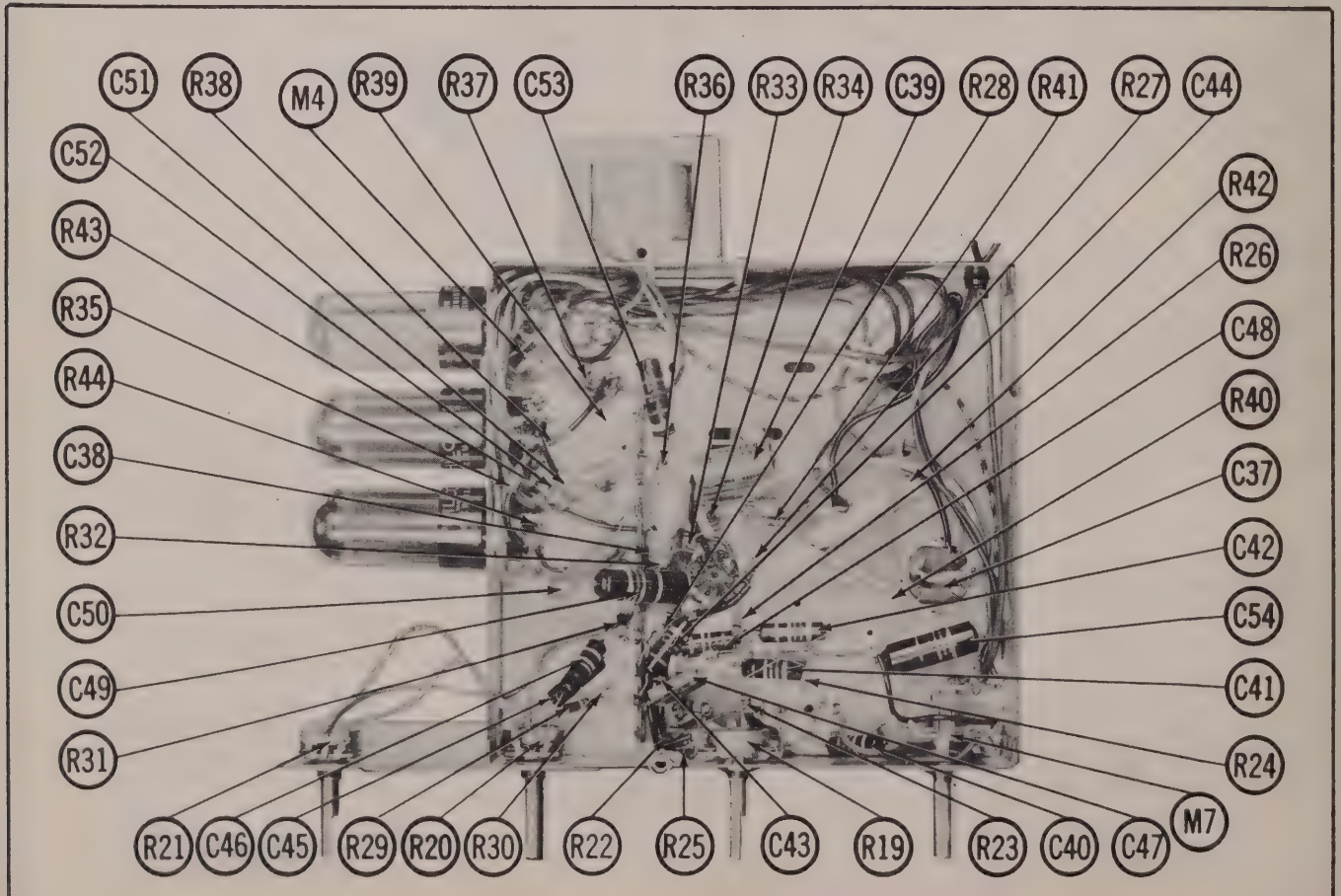
NOTE: AMPLIFIER SELECTOR SWITCH POSITIONS.

MODELS G1706 & G1707 (NON-STEREO)	MODELS SA-1500 (NO RECORD CHANGER)
1. OFF	1. OFF
2. PHONO	2. MAIN
3. TAPE	3. AUXILIARY 1
4. TUNER	4. AUXILIARY 2

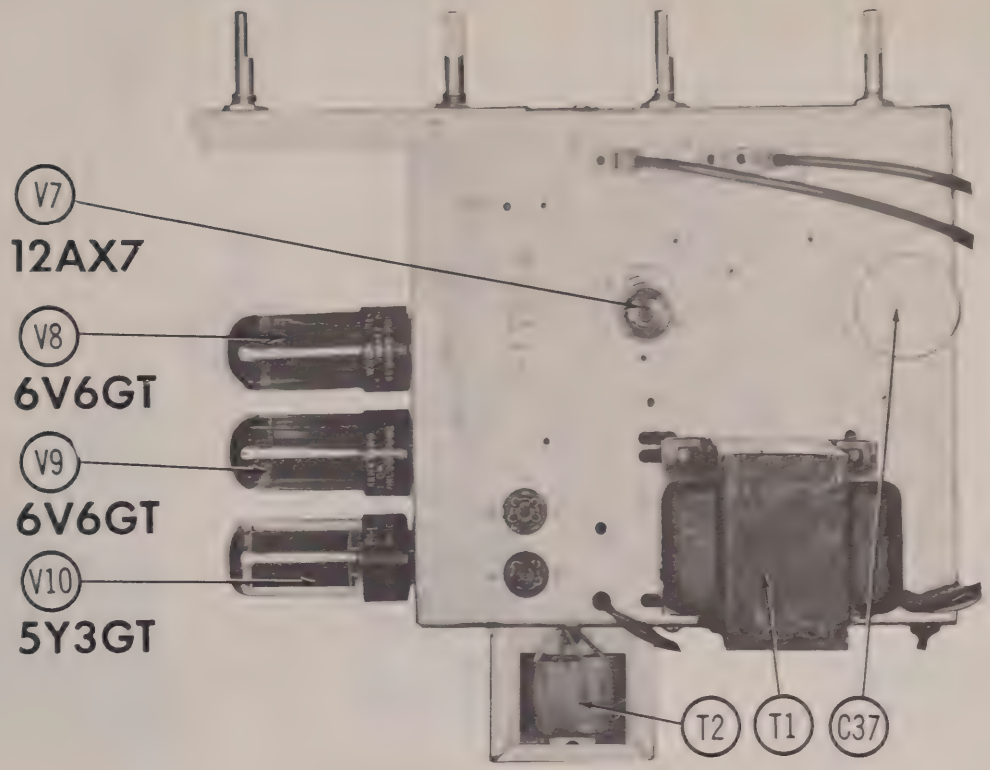
PHILCO MODELS G-1706, S, G-1707, S, RT-150, SA-1500



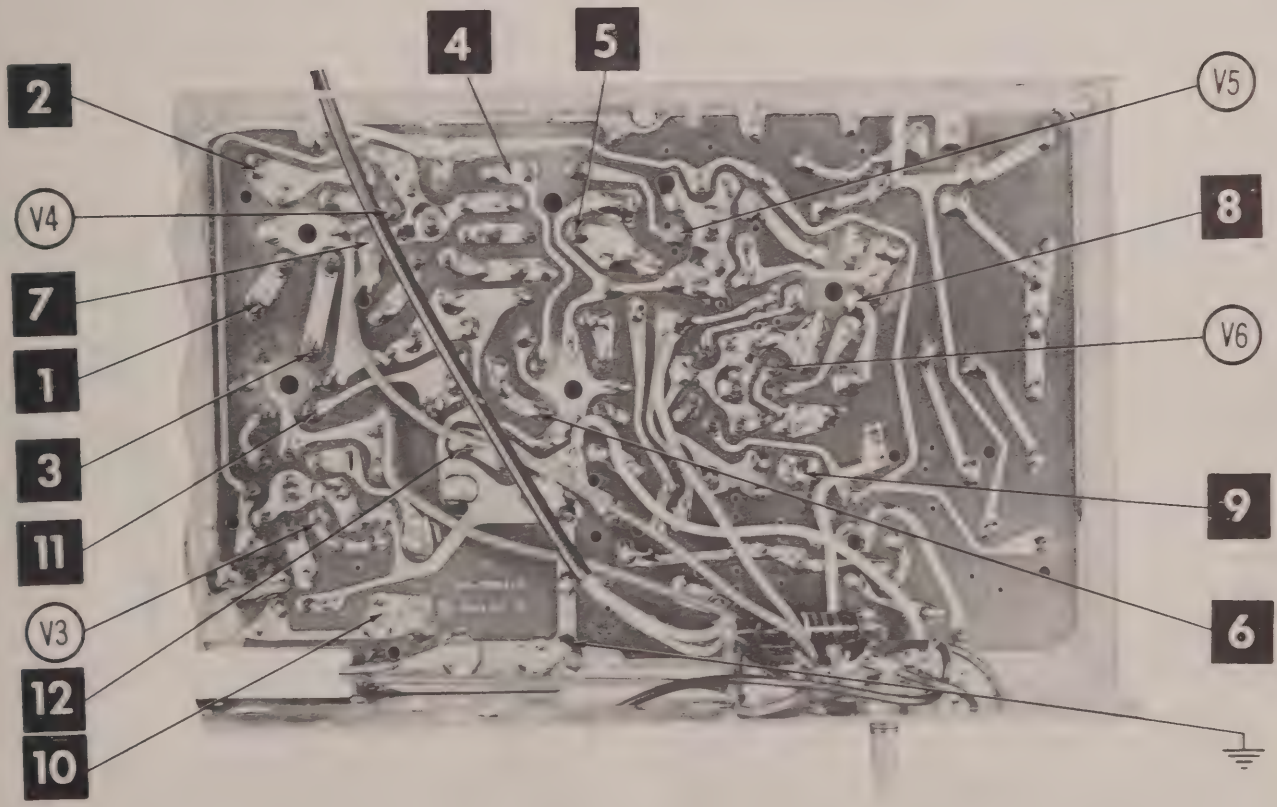
TUNER CHASSIS TOP VIEW-CAPACITOR, RESISTOR & MISC. IDENT.



AMPLIFIER CHASSIS-BOTTOM VIEW



AMPLIFIER CHASSIS-TOP VIEW



A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS / GENERAL ELECTRIC / RAYTHEON / SYLVANIA)
V1	FM RF-Amp. -FM Conv.	12AT7
V2	1st FM IF Amplifier	6BA6
V3	AM Converter	6BE6
V4	2nd FM-1st AM IF Amp.	6BA6
V5	FM Limiter	6AU6
V6	Discriminator-AM Det. AVC	6BJ7

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	VOLT	TOL	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	7.5		10%			DD-7R5				①
C2	1000		10%	62-210001011		D6-102	PM6D1	GTM-421	5GA-D1S 10%*	
C3	150		5%	30-1257-13	ADM-15-151	TCZ-150	22R5T15	MCE236	MS-315	
C4	680		10%	30-1257-15	ADM-20-681	DD-681	1R5T68		MS-368	
C5	10000			30-1238-2	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	②
C6	5000			30-1238-20	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C7	150		10%	30-1257-13	1469-00015	DD-150	22R5T15	MCE236	MS-315	
C8	5		10%	30-1257-14	ADM-15-050	DD-050	22R5V5	MCB205	MS-55	
C9	2-7			31-6520-15		829-7		CT552		
C10	3.3		5%	30-1224-114		TCZ-3R3	L10V33	ZT-5533	5TCCB-V33 S5%*	
C11	.5-3			31-6520-18		829-3		CT565		
C12	180		5%	30-1257-8	ADM-15-181	TCZ-180	22R5T18		MS-318	
C13	10		NPO 5%	62-010009001		TCZ-10	C10Q1C	CNO-410	5TCC-Q1S 5%*	
C14	12		NPO 5%	62-012300001		TCZ-12	C10Q12C	CNO-412	5TCC-Q12S 5%*	
C15	100			62-110009001	SI 100	D6-101	L10T1	UC-531	5GA-T1	
C16	10000			30-1238-2	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	10000			30-1238-2	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	③
C18	1000			62-210001011	SI 1000	DD-102	BYA10D1	B-210	5HK-D1	
C19	47			30-1230-4	SI 47	D6-470	L10Q47	UC-5447	5GA-Q47	
C20	7.5		N220	30-1257-16						
C21	10000			30-1262	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C22	.047	200		30-4685-45	P2151N-047	DD-503	BC2S47J	ACE6147	2SE-S47	
C23	1000			30-1262-11	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C24	4700			30-1262-3	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C25	10000			30-1262	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C26	10000			30-1238-2	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C27	22			30-1263-19	BPD-000022	DD-220	L10Q22	CNO-422	5GA-Q22	
C28	10000			30-1262	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C29	10000			30-1238-2	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C30	150			30-1262-24	BPD-00015	DD-151	L10T15	B-315	5GA-T15	
C31	1000			30-1262-45	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C32	220			30-1262-41	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C33	220			30-1262-41	BPD-00022	DD-221	L10T22	B-322	5GA-T22	

CAPACITORS (cont)

ITEM No.	RATING CAP.	VOLT	TOL	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C34	1000			62-210001011	SI 1000	D6-102	BYA10D1	B-210	5HK-D1	
C35	10000			30-1238-2	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C36	.0022	400	10%	30-4651-23	P488N-0022		PM6D22	GTM-4222	6TM-D22	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Some versions may use 5mmf in this application (Part #30-1257-14).
② Some versions may use 5000mmf in this application (Part #30-1238-20).
③ Not used in some versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	150Ω	
R2	2200Ω	
R3	1meg	
R4	6800Ω	
R5	1meg	
R6	220Ω	
R7	22K	
R8	2.2meg	
R9	470K	
R10	68Ω	
R11	220Ω	
R12	100K	
R13	15K	
R14	22K	
R15	22K	
R16	100K	
R17	2200Ω	
R18	47K	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA PHILCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Trans.	32-4718-2						
L2	FM RF Coil	32-4717-1						
L3	Fil. Choke	32-4422-8	19-1002	19-1002	BC-563	4606		2.2uh ①
L4	FM Osc. Coil	32-4716-1						
L5	Loop Ant.	76-10507-1						
L6	AM Osc. Coil	32-4693-10						
L7	1st FM IF	32-4715-1	16-3487	16-3487	FM-254	1463		
L8	1st AM IF	32-4583-14	16-6780	16-6780	BC-357	13-PC2	RF-4	②
L9	2nd FM IF	32-4712-1	16-3490	16-3490		1463-PC		
L10	2nd AM IF	32-4583-15	16-6780	16-6780	BC-357	13-PC2	RF-4	②
L11	3rd FM IF	32-4712-2	16-3490	16-3490		1463-PC		
L12	Discriminator	32-4714-2	17-3491	17-3491		1464-PC		

① IRC Part #CLA
② Alternate Part #32-4583-17.

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	Tuning Cap.	31-2783-14	AM 2 Gang
M2	Tuning Cap.	31-2789-2	FM 2 Gang
M3	Switch	42-2065-1	FM-AM
	Printed Board	54-9961-5	Tuner RT 150

AMP PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V7	AF Amp-Phase Inv.	12AX7	V9	Output	6V6GT
V8	Output	6V6GT	V10	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C37A	▲40	450	30-2590-33	AFH4-18-30	D0174	FP447	TMT-37 TD-10-450	TVL-4773	
B	■30	450							
C	▲20	450							
D	10	450	①						
C38	10	25	30-2417-8	PRS1250	BBR10-25	TC22	TD-10-25	TVA-1204	
C39	10	25	30-2417-8	PRS1250	BBR10-25	TC22	TD-10-25	TVA-1204	

① C37D not used in Models G1706, S; SA-1500

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C40	.0022	400	10%	30-4651-23	V84C4D22		PM6D22	GTM-4222	6TM-D22	
C41	.0068	400	10%	30-4651-31	V84C4D68		PM6D68	GTM-4268	6TM-D68	
C42	.0047	400	10%	30-4651-6	V84C4D47		PM6D47	GTM-4247	6TM-D47	
C43	.0047	600		30-4650-56	V688N-0047	DD-472	PM6D47	GEM-6247	6TM-D47	
C44	.0047	600		30-4650-56	V688N-0047	DD-472	PM6D47	GEM-6247	6TM-D47	
C45	.001	400	10%	30-4651-4	V84C6D1	DD-102	PM6D1	GTM-421	6TM-D1	①
C46	.01	400	10%	30-4651-28	V84C4S1		PM4S1	GTM-411	4TM-S1	①
C47	68		10%	60-00685417	1469-000068	DD-680	22R5Q68	CNO-468	MS-468	①
C48	.001	400	10%	30-4651-4	V84C6D1	DD-102	PM6D1	GTM-421	6TM-D1	①
C49	.047	400		30-4650-62	P488N-047	DD-503	CUB4S47	GEM-4147	4TM-S47	
C50	.0022	1000		30-4650-88	P1088N-0022	DD-222	CUB10D22	GEM-10222	10TM-D22	
C51	.0022	1000		30-4650-88	P1088N-0022	DD-222	CUB10D22	GEM-10222	10TM-D22	
C52	.1	200		30-4656-6	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C53	.01	600		30-4650-58	P688N-01	DD-103	CUB6S1	GEM-611	6TM-S1	
C54	.047	600		30-4650-62	P688N-047	DD-503	CUB6S47	GEM-6147	6TM-S47	

① Some versions use a component combination in this application (Part #58-1893).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R19	2meg	1/2	33-5535-47					Loudness, Taps ⓐ 200K & 1meg
R20A	1meg	1/2	33-5587-29	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R21A	1meg	1/2	33-5587-29	B-70	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R22	2.2meg	
R23	82K	
R24	22K	
R25	1meg	
R26	1meg	
R27	270K	
R28	2700Ω	
R29	220K	Note 1

ITEM No.	RATING	REMARKS
R30	22K	Note 1
R31	100K	
R32	100K	
R33	270K	
R34	2700Ω	
R35	470K	
R36	3300Ω	
R37	4700Ω	

ITEM No.	RATING	REMARKS
R38	4.7meg	
R39	270Ω	
R40	4000Ω 10W	Note 2
R41	10K	
R42	1500Ω 7W	Note 3
R43	56Ω	
R44	56Ω	

Note 1. Some versions use a component combination in this application(Part #58-1893).
Note 2. Not used in Models G1706, SA-1500
Note 3. Models G1706, S; SA-1500 Use 3300Ω in this application (Part #66-2335340).

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .9A	630 VCT ⓐ .110A	5V ⓐ 2A	32-8844-1①						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V ⓐ 1.3A	6.3V ⓐ 2A								

① Used in model G1707S.
Part #32-8790 used in Models G1706, S & #32-8790-4 used in Model SA-1500.

AMP PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	9000Ω CT	15Ω Tap ⓐ 5Ω Tap ⓐ 2Ω	32-8791-1							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1 SP2	10" Electrostatic	PM	3-4Ω	36-1653-6 36-1656-1	10A6A	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M4	1" # 26 Wire							

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	PHILCO PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE / NEEDLE	
M5		13-TB *	Not Req.	66 †	Not Req.		* Includes mounting mechanism † Use PT-3 mount

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	PHILCO PART No.	JENSEN PART No.	WALCO PART No.	
M6		S69X † or S69XSD †♦ or S69XDD ♦	*W-103STSS † or *W-103STDS †♦	† Jewel ♦ Diamond * Includes Cartridge

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M7	Switch	42-2093-1	Function Model G-1707S
	Switch	42-2085-1	Function Model G-1707
	Switch	42-2080-1	Function Model G-1706
	Switch	42-2099-2	Function Model SA-1500

CABINETS & CABINET PARTS

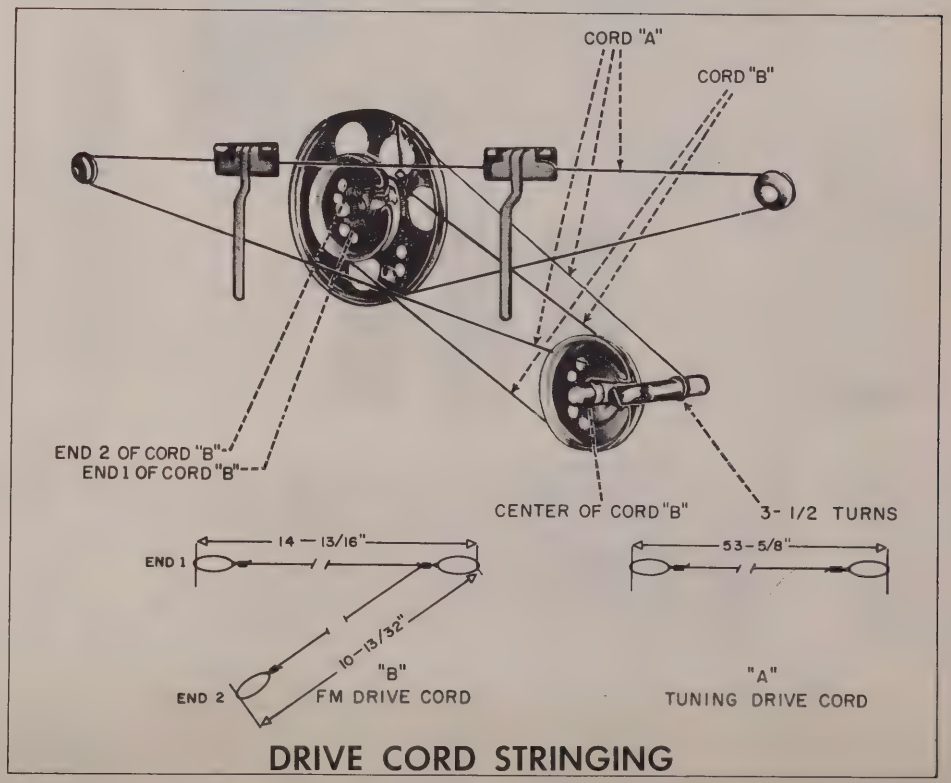
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Bezel	28-12234-2	RT-150, Tuner
Knob	54-6035-2	RT-150, Tuning
Knob	54-6035-13	RT-150, Selector
Dial Pointer	28-9739-8	
Dial Scale	56-5390-1	
Bezel	28-12232-5	Amplifier, Except SA-1500
Bezel	28-12232-6	Amplifier, SA-1500
Knob	54-6271-4	Amplifier
Leg	424-0022-25	Blond
Leg	424-0022-24	Mahogany
Leg	424-0022-26	Walnut

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



DRIVE CORD STRINGING

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PRECISE MODEL
Mark V

PRECISE MODEL
Mark V

PRECISE MODEL
Mark V

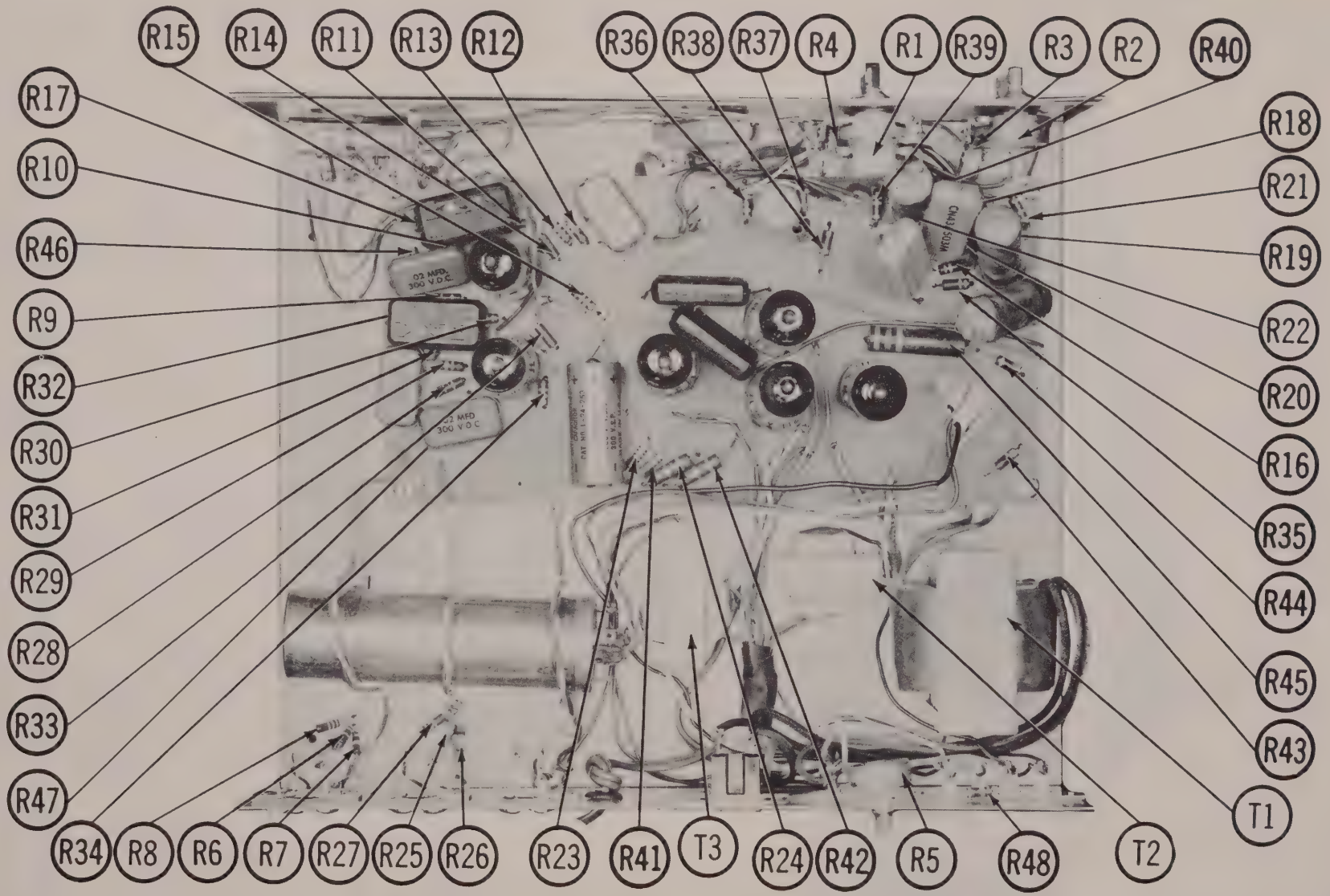
TRADE NAME	Precise Model Mark V
MANUFACTURER	Precise Development Corp., Oceanside, N. Y.
TYPE SET	AC Operated 6 Tube Stereo Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 61 Watts, .61 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JV329

SET 463 FOLDER 12



CHASSIS TOP VIEW - RESISTOR & TRANSFORMER IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆	GENERAL ELECTRIC ◆	RAYTHEON ◆	SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Channel 1 Phono Preamp.	ECC83/12AX7
V2	Channel 1 AF Amp. - Channel 2 AF Amp.	ECC83/12AX7
V3	Channel 1 Output	EL84/6BQ5

ITEM No.	USE	TYPE
V4	Channel 2 Phono Preamp.	ECC83/12AX7
V5	Channel 2 Output	EL84/6BQ5
V6	Rectifier	EZ81/6CA4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PRECISE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▰140	300		AFHS3-26-50	C0734.3	FP326	TMT-212	TVLS-3585.5*	
B	■20	300			BR2035	TC65	TD-20-350		
C	▲100	300							
C2	24	300		PRS350V24					

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	PRECISE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	100				BPD-0001	DD-101	L10T1	ZT-531	5GA-T1	
C4	.02	300			P488N-02	DD-203	PM4S2	GTM-4122	4TM-S2	
C5	.05	600			P688N-05	DD-503	PM6S5	GTM-6147	6TM-S5	
C6	.02	300			P488N-02	DD-203	PM4S2	GTM-4122	4TM-S2	
C7	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C8	.05	400			P488N-05	DD-503	PM4S5	GTM-4147	4TM-S5	
C9	.05	400			P488N-05	DD-503	PM4S5	GTM-4147	4TM-S5	
C10	.5	100			P288N-5		CUB2P5	GEM-205	2TM-P5	
C11	.5	100			P288N-5		CUB2P5	GEM-205	2TM-P5	
C12	.05	500			P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	①
C13	100				BPD-0001	DD-101	L10T1	ZT-531	5GA-T1	
C14	.02	300			P488N-02	DD-203	PM4S2	GTM-4122	4TM-S2	
C15	.05	600			P688N-05	DD-503	PM6S5	GTM-6147	6TM-S5	
C16	.02	300			P488N-02	DD-203	PM4S2	GTM-4122	4TM-S5	
C17	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C18	.05	400			P488N-05	DD-503	PM4S5	GTM-4147	4TM-S5	
C19	.05	400			P488N-05	DD-503	PM4S5	GTM-4147	4TM-S5	
C20	.5	100			P288N-5		CUB2P5	GEM-205	2TM-P5	
C21	.5	100			P288N-5		CUB2P5	GEM-205	2TM-P5	
C22	.05	600			P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	①

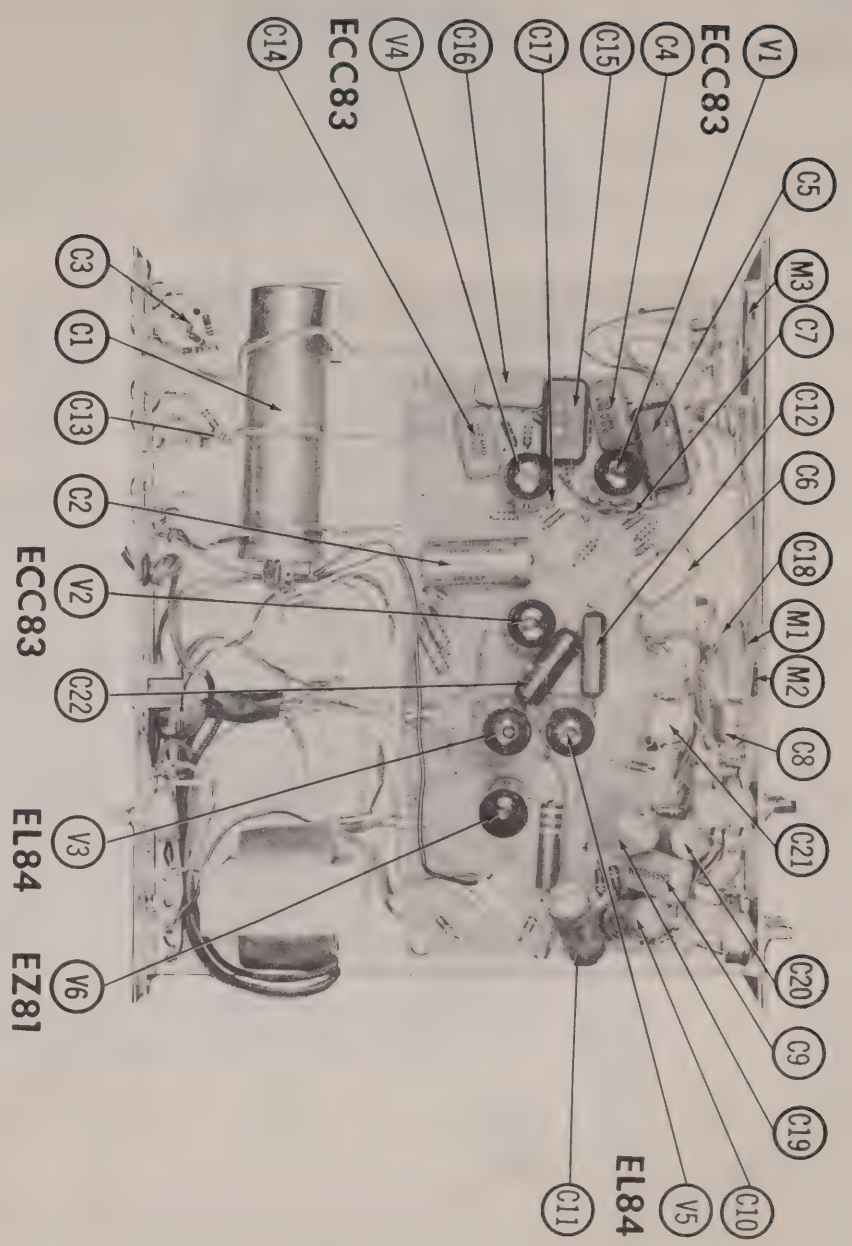
① Some versions may use .1mfd 600V in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PRECISE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K *	½	BA819-016					Loudness, Channel 1
B	500K *	½					UE4028	Loudness, Channel 2
R2A	1meg		BA811-2129	B-69	A47-1meg-S	Q11-137	U54	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1000Ω	½	BA811-2647	B-5	A47-1000-S	Q11-108	U4	Tone, Channel 1
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	1000Ω	½	BA811-2647	B-5	A47-1000-S	Q11-108	U4	Tone, Channel 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	1000Ω	½	BA269-029	AB-5	A47-1000-S	Q11-108	U4	Hum Balance
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	

* Tap ⓐ 100K

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	470K	Note 1
R7	100K	Note 1
R8	3.3meg	Note 1
R9	5.6meg	
R10	68K	
R11	220K	
R12	10K	
R13	68K	
R14	1.5meg	
R15	68K	
R16	22K	
R17	470K	Note 1
R18	470Ω	
R19	120Ω	
R20	820Ω	

ITEM No.	RATING	REMARKS
R21	470Ω	
R22	220K	
R23	470K	
R24	180Ω 1W	
R25	470K	Note 1
R26	100K	Note 1
R27	3.3meg	Note 1
R28	5.6meg	
R29	68K	
R30	68K	
R31	10K	
R32	220K	
R33	1.5meg	
R34	68K	
R35	22K	

ITEM No.	RATING	REMARKS
R36	470Ω	
R37	120Ω	
R38	820Ω	
R39	470Ω	
R40	220K	
R41	470K	
R42	180Ω 1W	
R43	10K	
R44	4700Ω	
R45	150Ω 3W	
R46	47K	
R47	47K	
R48	68Ω	

Note 1. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	PRECISE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .61A	480 VCT @ .110A	6.3V @ 3.5A	PT-11						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	PRECISE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7000Ω	16Ω CT	M3281							
T3	7000Ω	16Ω CT	M3281							

MISCELLANEOUS

ITEM No.	PART NAME	PRECISE PART No.	NOTES
M1	Switch		Off-On (SPDT, Slide Type)
M2	Switch		Phono-Radio (DPDT, Slide Type)
M3	Switch		Norm. -Mon-Rev. -Mute (8P4T, Slide Type)

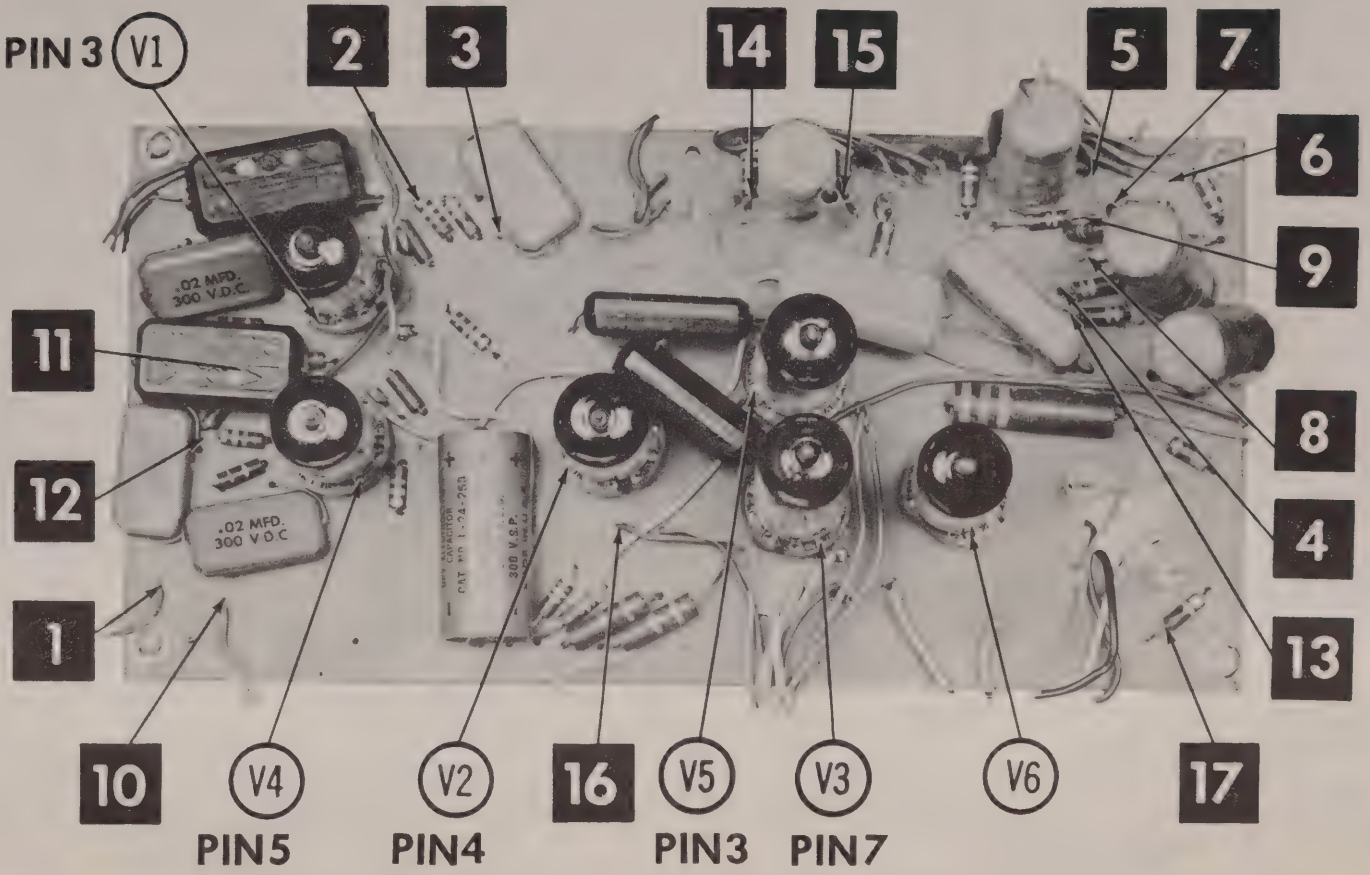
CABINETS & CABINET PARTS

When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

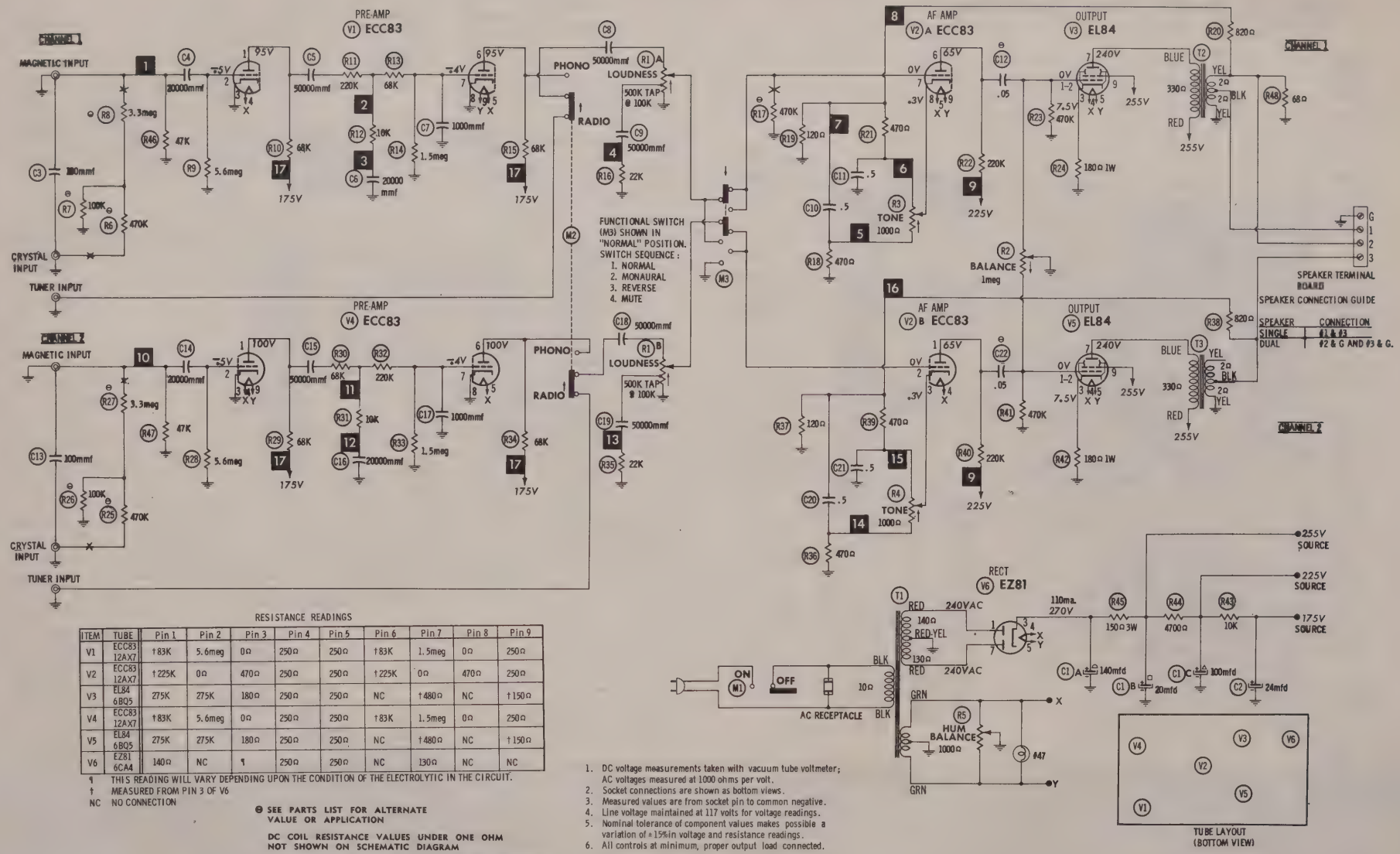


A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD
MODEL Mark V

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

FOLDER 12



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†83K	5.6meg	0Ω	250Ω	250Ω	†83K	1.5meg	0Ω	250Ω
V2	ECC83 12AX7	†225K	0Ω	470Ω	250Ω	250Ω	†225K	0Ω	470Ω	250Ω
V3	EL84 6BQ5	275K	275K	180Ω	250Ω	250Ω	NC	†480Ω	NC	†150Ω
V4	ECC83 12AX7	†83K	5.6meg	0Ω	250Ω	250Ω	†83K	1.5meg	0Ω	250Ω
V5	EL84 6BQ5	275K	275K	180Ω	250Ω	250Ω	NC	†480Ω	NC	†150Ω
V6	EZ81 6CA4	140Ω	NC	¶	250Ω	250Ω	NC	130Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V6
NC NO CONNECTION

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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PRECISE MODEL Mark V

PHOTOFACT* Folder

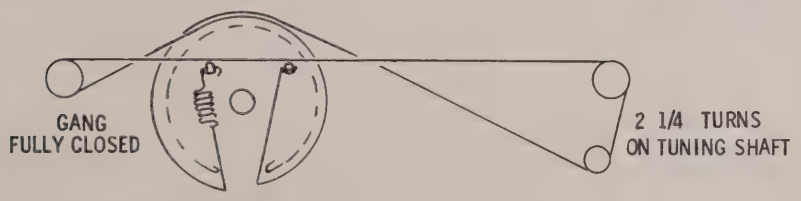
RAULAND MODEL HF-255A

RAULAND MODEL HF-255A

RAULAND MODEL HF-255A

TRADE NAME	Rauland Model HF-255A	
MANUFACTURER	Rauland-Borg Corp., 3523 W. Addison Street, Chicago 18, Illinois	
TYPE SET	AC Operated 9 Tube FM-AM Tuner	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 36 Watts, .375 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST 510-1750KC		FREQ. MOD. 88-108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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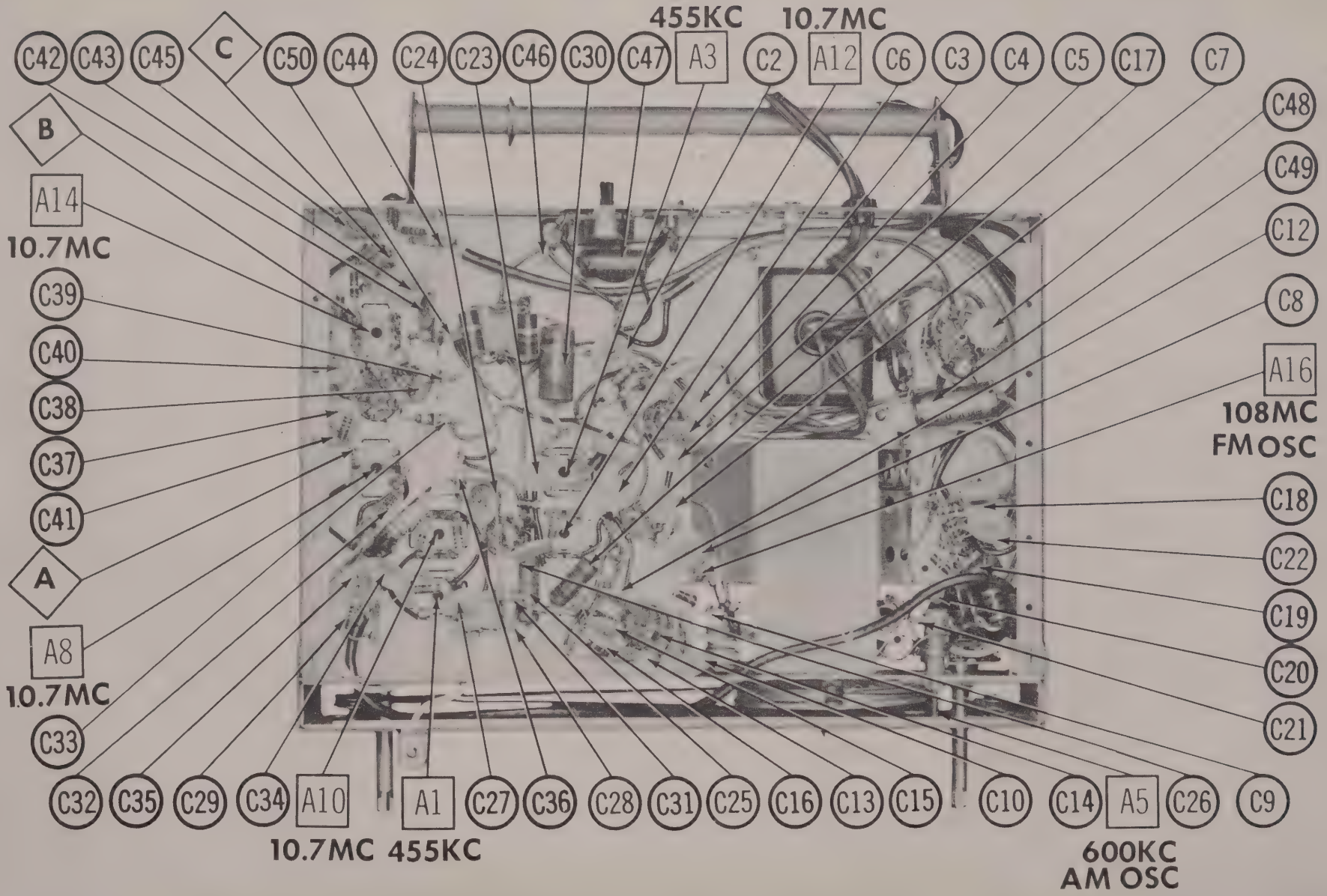
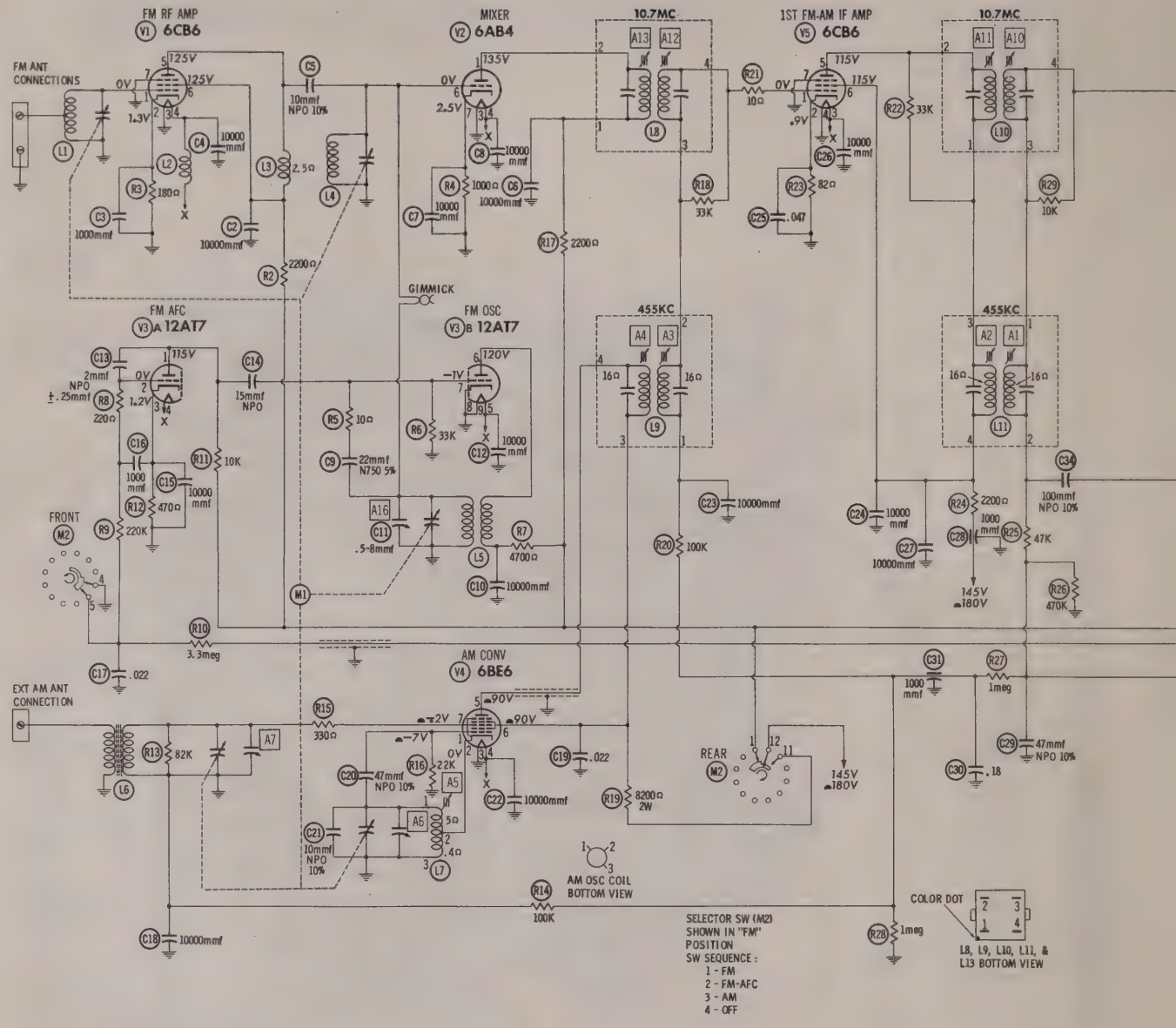
SET 463 FOLDER 13



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

RAULAND
MODEL HF-255A



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	0Ω	180Ω	0Ω	.6Ω	†3000Ω	†3000Ω	0Ω		
V2	6AB4	†3000Ω	TP	0Ω	.1Ω	TP	0Ω	1000Ω		
V3	12AT7	†10K	220K ▲ 4meg	470Ω	.1Ω	.1Ω	†5500Ω	33K	0Ω	0Ω
V4	6BE6	▬ 22K	▬ .4Ω	0Ω	.1Ω	▬ †9000Ω	▬ †9000Ω	▬ 700K		
V5	6CB6	750K	82Ω	.1Ω	0Ω	†3000Ω	†3000Ω	0Ω		
V6	6CB6	500K	82Ω	.6Ω	0Ω	†3000Ω	†3000Ω	0Ω		
V7	6AU6	47K	0Ω	0Ω	.5Ω	†30K	†20K	0Ω		
V8	6AL5	0Ω	100K	.5Ω	0Ω	150K	0Ω	100K		
V9	6X4	240Ω	TP	0Ω	.1Ω	TP	250Ω	¶		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V9.
▬ MEASURED IN "AM" POSITION.
▲ MEASURED IN "FM-AFC" POSITION.
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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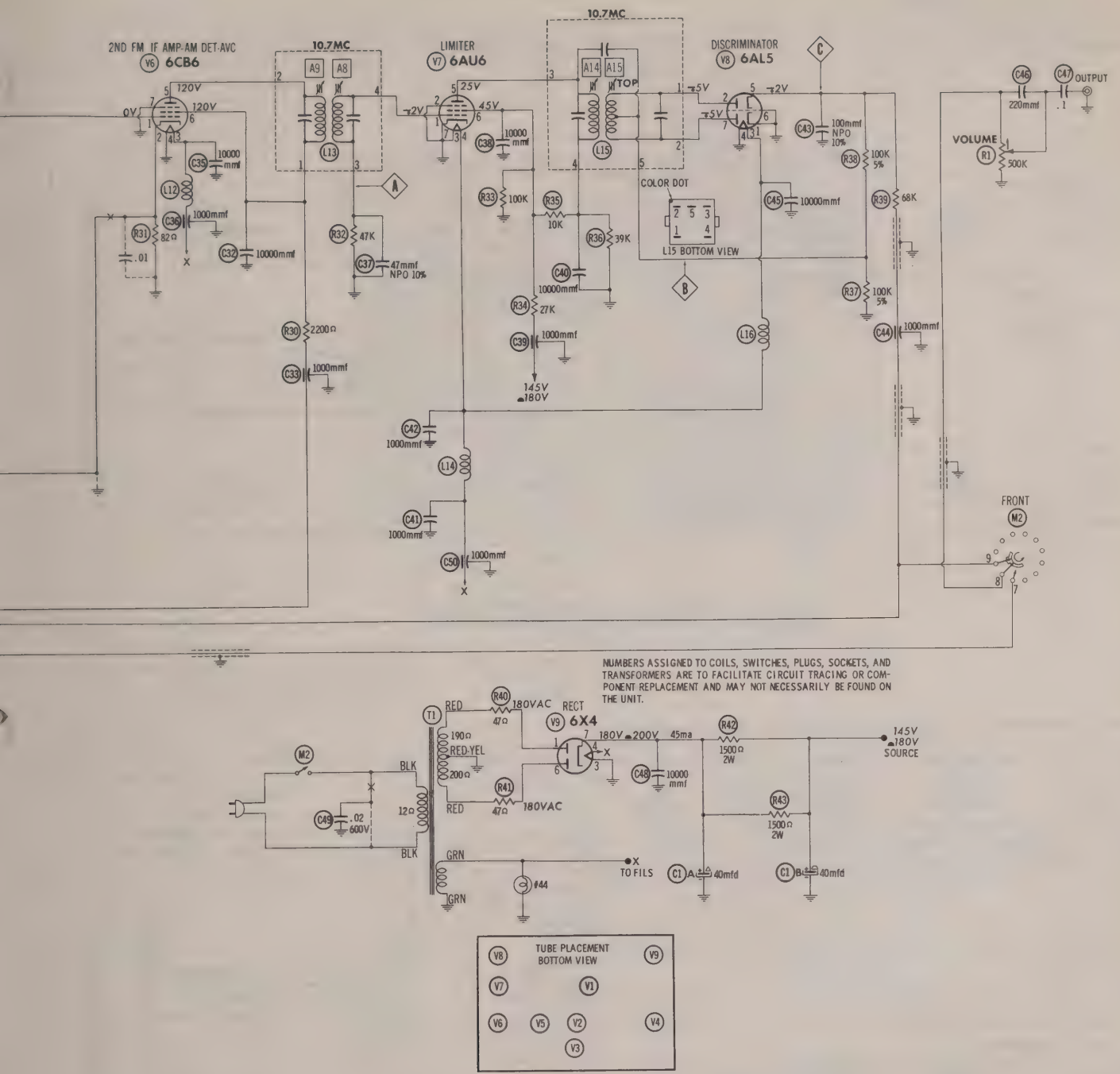


RAULAND MODEL HF-255A

RAULAND MODEL HF-255A

FOLDER 13

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A4	GENERAL CEMENT #8606, 8606L, 8282, 9295 WALSCO #2526, 2543, 2544, 2545
A5	GENERAL CEMENT #8721, 8722 WALSCO #2519
A6, A7, A16	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8 thru A15	GENERAL CEMENT #5097, 8727 WALSCO #2515

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully open	AC probe to output receptacle Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.		Loop	600KC	"	600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum deflection while rocking tuning gang.
3.		"	1500KC	"	1500KC	"	A6, A7	Adjust for maximum deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.01mfd	High side to pin 6 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod)	FM	Tuning gang fully open.	DC probe to point Ⓐ, Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe thru 1meg to point Ⓑ. Common to chassis.	A14	"
6.	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.01mfd	High side to pin 6 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully open	Vert. Amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	"	"	Vert. Amp. thru 27K to point Ⓑ. Low side to chassis.	A14	"
6.	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	270Ω Carbon Resistor	High side thru 270Ω to FM antenna terminal	88MC	FM	88MC	DC probe to point Ⓐ. Common to chassis.	L5	Adjust for maximum deflection by compressing or expanding coil turns.
8.	"	"	108MC	"	108MC	"	A16	"
9.	"	"	100MC	"	100MC	"	L4, L1	Adjust for maximum deflection by compressing or expanding coil turns.
10.	Repeat steps 7, 8 and 9 until no further improvement is noted.							

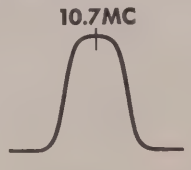


FIG. 1

FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amp.	6CB6	
V2	FM Mixer	6AB4	
V3	FM Osc. -FM AFC	12AT7	
V4	AM Converter	6BE6	
V5	1st FM-AM IF Amp.	6CB6	

ITEM No.	USE	TYPE	NOTES
V6	2nd FM IF Amp. - AM Det. -AVC	6CB6	
V7	FM Limiter	6AU6	
V8	Discriminator	6AL5	
V9	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

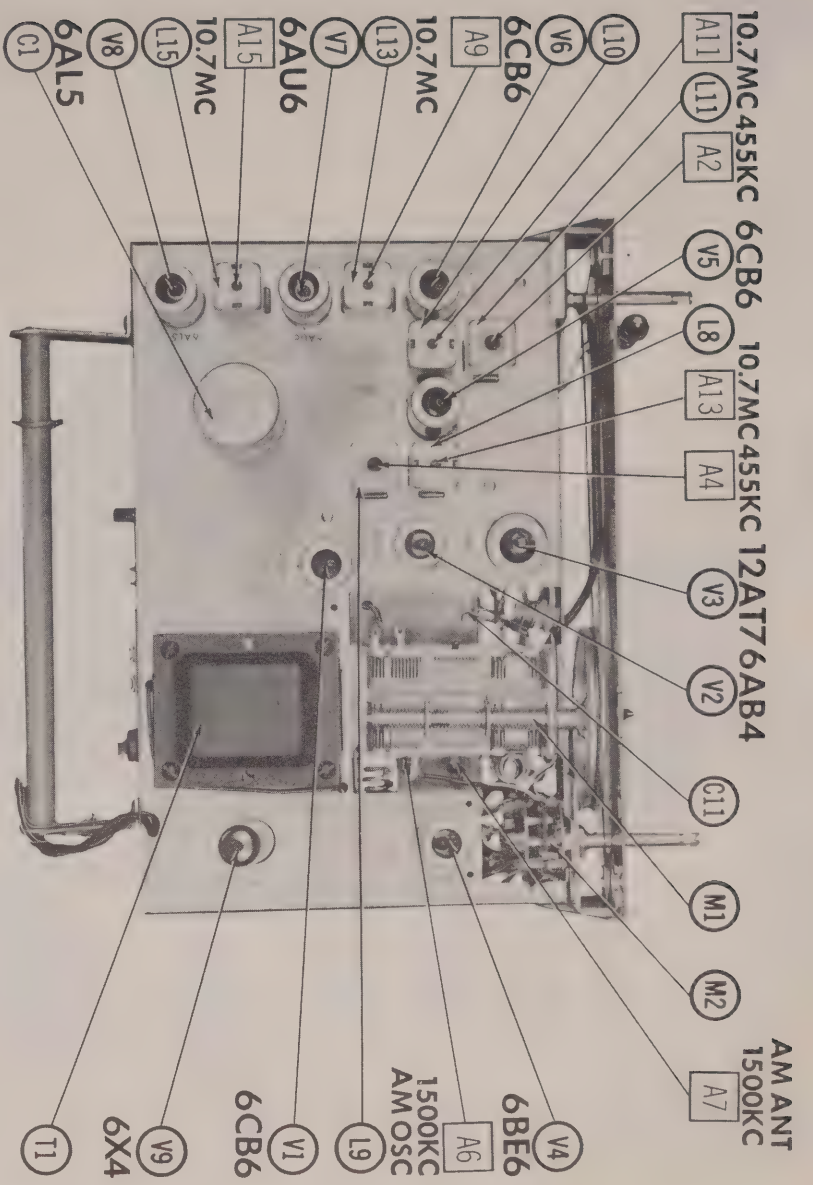
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RAULAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	300		AFH3-100	D0016	FP217.84	TMT-150	TVL-3577	
B	▲40	300							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA RAULAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C3	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C4	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C5	10		NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10% *	
C6	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C8	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C9	22		N750 5%		N750-DI 22	DTN-22	C10Q22U	CN7-422	5TCU-Q22S 10% *	
C10	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C11	.5-8									
C12	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C13	2		NPO ±.25mmf						5TCCB-V2S ±.25mmf*	
C14	15		NPO		NPO-DI 15	DTZ-15	C10Q15C	CNO-415	5TCC-Q15S 10% *	
C15	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C16	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C17	.022	200			P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C18	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C19	.022	200			P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C20	47		NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CNO-447	5TCC-Q47S 10% *	
C21	10		NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10% *	
C22	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C23	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C24	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C25	.047	200			P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C26	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C27	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C28	1000				EF-001	MFT-1000			503C-D1	
C29	47		NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CNO-447	5TCC-Q47S 10% *	
C30	.18	200			P288N-2		BYB6P2	GEM-602	2TM-P2	
C31	1000				EF-001	MFT-1000			503C-D1	
C32	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C33	1000				EF-001	MFT-1000			503C-D1	
C34	100		NPO 10%		NPO-DI 100	DTZ-100	C10T1C	CNO-310	5TCC-T1S 10% *	
C35	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C36	1000				EF-001	MFT-1000			503C-D1	
C37	47		NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CNO-447	5TCC-Q47S 10% *	
C38	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C39	1000				EF-001	MFT-1000			503C-D1	
C40	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C41	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	RAULAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C42	1000				BPD-001	DD-102	BYAI0D1M	B-210	5HK-D1	
C43	100		NPO 10%		NPO-DI 100	DTZ-100	C10T1C	CNO-310	5TCC-T1S 10% *	
C44	1000				EF-001	MFT-1000			503C-D1	
C45	10000				BPD-01	DD-103	BYAI0S1	B-110	5HK-S1	
C46	220				BPD-00022	DD-221	LI0T22	B-322	5GA-T22	
C47	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C48	10000				BPD-01	DD-103	BYAI0S1	B-110	5HK-S1	
C49	.02	600			P688N-02	DD-203	CUB6S2	GEM-612	6TM-S2	
C50	1000				EF-001	MFT-1000			503C-D1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RAULAND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	RP-504AF	AB-60 *	B47-500K-Z	B13-133	TA55A	Volume
B	Shaft			AK-1	Not Req.	TM1	Not Req.	* Ream out mounting hole.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RAULAND PART No.	NOTES
	OHMS	WATT		
R2	2200Ω			
R3	180Ω			
R4	1000Ω			
R5	10Ω			
R6	33K			
R7	4700Ω			
R8	220Ω			
R9	220K			
R10	3.3meg			
R11	10K			
R12	470Ω			
R13	82K			
R14	100K			
R15	330Ω			
R16	22K			
R17	2200Ω			
R18	33K			
R19	8200Ω	2		
R20	100K			
R21	10Ω			
R22	33K			

ITEM No.	RATING		RAULAND PART No.	NOTES
	OHMS	WATT		
R23	82Ω			
R24	2200Ω			
R25	47K			
R26	470K			
R27	1meg			
R28	1meg			
R29	10K			
R30	2200Ω			
R31	82Ω			
R32	47K			
R33	100K			
R34	27K			
R35	10K			
R36	39K			
R37	100K 5%			
R38	100K 5%			
R39	68K			
R40	47Ω			
R41	47Ω			
R42	1500Ω	2		
R43	1500Ω	2		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		RAULAND PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil	LL-0061						
L2	Fil. Choke		19-2006	19-2006	BC-560	4590		.68uh ①
L3	RF Choke							3.3uh ①

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		RAULAND PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L4	FM RF Coil	LL-0060						
L5	FM Osc. Coil	LL-0062						
L6	Loopstick	LW-0109						
L7	AM Osc. Coil	LL-0059			BC-393			
L8	1st FM IF Trans.	LR-0032	16-3487	16-3487	FM-254	1463		
L9	1st AM IF Trans.	LR-0041	16-6758	16-6758	BC-352	12-C1	RF-1	
L10	2nd FM IF Trans.	LR-0033	16-3487	16-3487	FM-254	1463		
L11	2nd AM IF Trans.	LR-0041	16-6758	16-6758	BC-353	12-C2	RF-2	
L12	Fil. Choke		19-2006	19-2006	BC-560	4590		.68uh ①
L13	3rd FM IF Trans.	LR-0033	16-3487	16-3487	FM-254	1463		
L14	Fil. Choke		19-2006	19-2006	BC-560	4590		.68uh ①
L15	Discriminator	LQ-0179	17-3494	17-3494	FM-253	1464		
L16	Fil. Choke		19-2006	19-2006	BC-560	4590		.68uh ①

① IRC Part #CLA.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	RAULAND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .375A	360VCT ⓐ .045A	6.3V ⓐ 2.8A	LP-0245	22R38				22R38	

MISCELLANEOUS

ITEM No.	PART NAME	RAULAND PART No.	NOTES
M1	Tuning Cap.		5 Gang (AM Sections: Ant. 12-432mmf, Osc. 8-152mmf)
M2	Switch	X-0312-B	Selector (Off-AM-FM AFC-FM)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

*TRADE MARK

GENERAL INFORMATION

Revere Models T-202 and T-204 tape recorders have piano key-type controls for each mode of operation. The Model T-202 is a monaural recorder. The Model T-204 is an in-line head stereo recorder with a preamplifier that permits prerecorded stereophonic tape to be played back.

These units will record two tracks of material on standard-width recording tape. Thus the playing time of a tape reel is doubled, with no loss of frequency response of quality. Recordings can be made from a microphone, phonograph, AM-FM tuner, hi-fi system, external radio, or television.

CAUTION: Do not use on direct current. Check nameplate at rear of machine for proper current and voltage.

Manufactured by:

Revere Camera Company
320 East Twenty-First Street
Chicago 16, Illinois

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA
C409

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REVERE MODELS
T-202, T-204

REVERE MODELS
T-202, T-204

SET 463 FOLDER 14

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On-Off-Volume Control

Rotating this control clockwise supplies power to the recorder and regulates the volume for both recording and playback.

Tone Control

This control gives three distinct tonal extremes, which can be varied continuously to produce a blend of tones suitable to any type of program. The Tone control is automatically disconnected during recording.

Stop Key

When the Stop Key is up, power is supplied to the electrical solenoid which performs the mechanical functions. The solenoid enables the recorder to be operated by remote control. When the Stop key is down, power is interrupted, disengaging all pressure pads and rubber idlers.

Play Key

Depressing the Play key switches the amplifier circuitry so that a recorded tape can be played back. The Speaker key is automatically engaged, and the Volume control is temporarily muted.

Speaker Key

The Speaker key may be depressed independently from the Play key. This allows material to be monitored while it is being recorded or to be played back from an external source. Also, the unit can be used as a public-address system.

Record Key

Depressing the Record key enables material at the Input jack to be recorded. The Record Key Lock must be released before the Record key can be depressed.

Rapid Forward-Rewind Lever

This lever is used to skip ahead to any point on the tape or to rewind the tape onto the supply reel. When this lever is moved back and forth, the tape can be inched along in either direction until the exact point on the tape is found. This lever can be moved while the recorder is in any function, and any previously depressed key is automatically disengaged.

Manual Start-Stop Button

This button, when pushed, instantly stops the tape in either record or play. It is used to noiselessly hold back the tape to prevent unwanted breaks in material from being recorded, or to precisely preset the record level while the Record key is depressed.

Speed Control Knob

This knob selects either the 3 3/4-ips or $7\frac{1}{2}$-ips tape speeds while the recorder is in any function. The fidelity at $7\frac{1}{2}$ ips is greater than at 3 3/4 ips.

Automatic Record Key Lock

This is a safety device which locks the Record key to prevent accidental erasure. To actuate the Record key, move the Record Key Lock to the right before depressing the Record key. The lock is automatically set when the Rapid Forward-Rewind lever is used.

Record Level Indicators

These indicators take the guesswork out of setting the recording level. The Volume control should be adjusted until the Normal indicator flashes and no flashing occurs at the Distorted indicator. To preset the level in the stop position, turn the Tone control to Treble.

Tape Counter

Set the counter to zero at the beginning of a reel. After each selection is recorded, note the counter readings for future reference. In this way, the counter can be used to locate a previously recorded selection on the tape.

Dual Hi-Lo Input Jack

The Input jack is so designed that the proper selection is made between the microphone (requires short input plug) or phonograph (requires long input plug). Thus, two input jacks are unnecessary.

Extension Speaker Jack

This jack can be used to connect the speaker in a remote location. An attachment cord is furnished for this purpose. The speaker in the recorder is automatically disconnected by inserting the extension plug. Earphones can be plugged into the jack so that microphone recordings can be monitored.

OPERATING INSTRUCTIONS

Threading The Tape

1. Place a full reel of tape (glossy side out, i.e., "A" wind) on left spindle. Place an empty reel on right spindle. Make sure the reels are fully seated.
2. Unwind approximately 14 inches of tape from the supply reel. Hold a section of the tape taut with both hands and insert it into the tape slot. Make sure the dull-coated side of the tape faces the rear of the recorder. Place the tape between the automatic tape cutoff post and pin. Feed the end of the tape into one of the radial slots in the empty reel. Rotate the reel counterclockwise until the tape is secured and all slack is taken up between reels.

To Record From a Microphone

NOTE: Any previously recorded sound is erased when new material is recorded. Therefore, no additional step is necessary to erase recordings before new ones are made.

1. Insert microphone plug firmly into Input jack.
2. Turn Tone control to Treble. While talking into the microphone, adjust the Volume control until the Normal indicator flashes and no flashing occurs at the Distorted indicator.
3. Set the tape counter to zero, slide the Record Key Lock to the right, and depress the Record key.

To Record From Radio, TV, or Phonograph

1. To record from a radio or TV, insert the radio attachment cord plug into the Input jack on the recorder. Connect the cord clips to the radio or TV speaker terminals.
2. To record from a phonograph, insert a standard phono plug from the source of a crystal-type phonograph into the Input jack on recorder. If a standard phono plug is not available, an attachment cord may be used.
3. Proceed with the recording, as described under "To Record From a Microphone".
4. A program can be heard in either the stop or the record position by depressing the Speaker key. In the record position, the Speaker key can be released, without disturbing the recording, by again depressing the Record key.

Twin-Track Recording

1. Each reel of tape holds two full-length recordings, one on each half of the dull side of the tape.
2. After the first track has been recorded, a second recording can be made on the same tape by removing the reels from the recorder, turning them over, and placing them on opposite spindles.
3. Thread the tape, and proceed with the recording as previously described.
4. After the second track has been recorded, the first track is ready to be played, without rewinding, by changing the reels as described in Step 2.

Splicing and Editing Tape

NOTE: Since it is impossible to edit and splice one track without affecting the other, limit recordings to be edited to one track only.

1. The tape can be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements can be inserted between selections, and unused section of tape can be spliced for re-use.
2. For best results, cut tape at a slight diagonal, join ends with splicing tape on the glossy side, and trim off any excess width. Use Scotch tape No. 41 to prevent "bleeding" of the adhesive.
3. The tape can be cut at the exact sound by pulling off the head cover and marking the tape at the right element in the black slot of the sound head. (The left element is the erase head.) The tape is most easily removed from the threading slot by stretching the tape toward the operator and against the front head cover, and lifting the tape.

To Play Back Recordings

1. Move the Rewind knob to the left, and wind the tape back to the original counter setting. Return the Rewind knob to the center position to stop the reels.
2. Depress the Play key and adjust the volume and tone to the desired level.

Fast Forward

1. Any portion of a recording can be skipped or any selection located in a few seconds by moving the Rapid Forward knob to the right. A few seconds of fast forward is equivalent to several minutes of playing time.
2. By moving the Rapid Forward knob back and forth, the tape can be inched along to an exact point.
3. After reaching the desired portion of the tape, move the Rapid Forward knob to the middle or neutral position to stop the tape.

NOTE: The lever can be moved while the recorder is in play, record, or stop. Moving the lever will automatically release the Play and Record keys.

To Use as Public-Address System

1. Insert the microphone plug into the recorder input jack.
2. Depress the Stop and Speaker keys, and adjust Volume and Tone controls to desired listening level.

Connecting To Hi-FI Systems

1. The recorder can be connected to hi-fi systems by using Revere A196-10 hi-fi cables.
2. For a recording, plug a hi-fi cable between the recorder input jack and the jack of an amplifier marked Detector, Tape, Recorder-Input, or Preamplifier Output.
3. To play a tape, plug a hi-fi cable between the recorder rear to Aux. Amp. socket and amplifier socket marked Auxiliary, TV, Tuner, or IV. Input.
4. While tape is playing, set the recorder Tone control so that the dot is on the red Hi-Fi position, and set the volume to flash the Normal indicator. Thereafter, adjust the hi-fi amplifier volume and tone to the desired listening level.

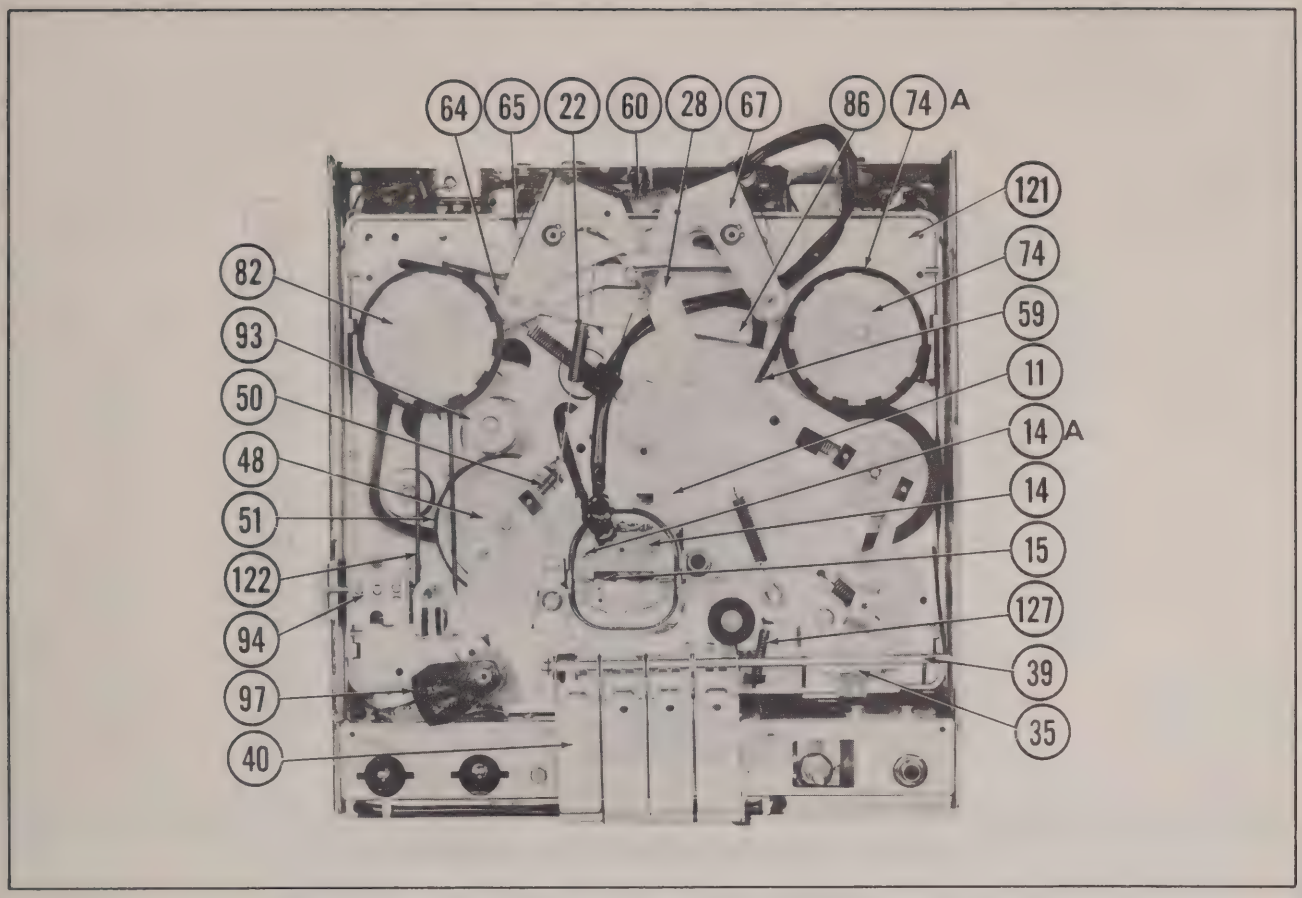


FIG. 1 TOP VIEW OF MECHANISM WITH ESCUTCHEON REMOVED

INSTRUCTIONS FOR STEREO MODEL ONLY

The Revere Model T-204 stereophonic tape recorder also makes monaural track recordings in the same manner described in the foregoing "Operating Instructions". In addition, this stereo recorder has an in-line lower channel head and preamplifier that permits prerecorded stereophonic tape to be played back.

Playing Stereo Recordings Through Radio, TV, Or Phono

1. Thread the stereo tape as described under "Threading the Tape".
2. The upper stereo channel is played as a regular recording through the tape recorder and its self-contained speaker, as described under "To Play Back Recordings".
3. The lower stereo channel of the recorder has a built-in preamplifier which enables playing through most radios, TV's, tape recorders, or phonos with 1-volt record-player jacks.
4. Connect to radio, TV, tape recorder, or phono by plugging miniature phono plug into Lower Channel Stereo Preamp. Output on rear panel. Then plug phono pin plug into phono input of radio, TV, or phono.
5. Turn switch on radio, TV, or phono to Phono position. Place recorder and radio, TV, or phono on one side of the room, at least seven feet apart.
6. Depress the Play key and adjust the volume of both units until the sound is equal when you are midway between them.

DISASSEMBLY INSTRUCTIONS

To Remove Recorder From Case

1. Remove four Phillips head tapping screws and their respective washers next to each rubber foot on bottom of case.
2. Remove two Phillips head screws and their respective washers from the back of the case, one on each side to the metal grille.
3. Carefully lift the unit out of the case. The long speaker cable permits the speaker to remain with the case.
4. Unplug the speaker cable.

To Remove Top Plate Assembly

1. Remove three top plate screws (5) between the reel spindles.

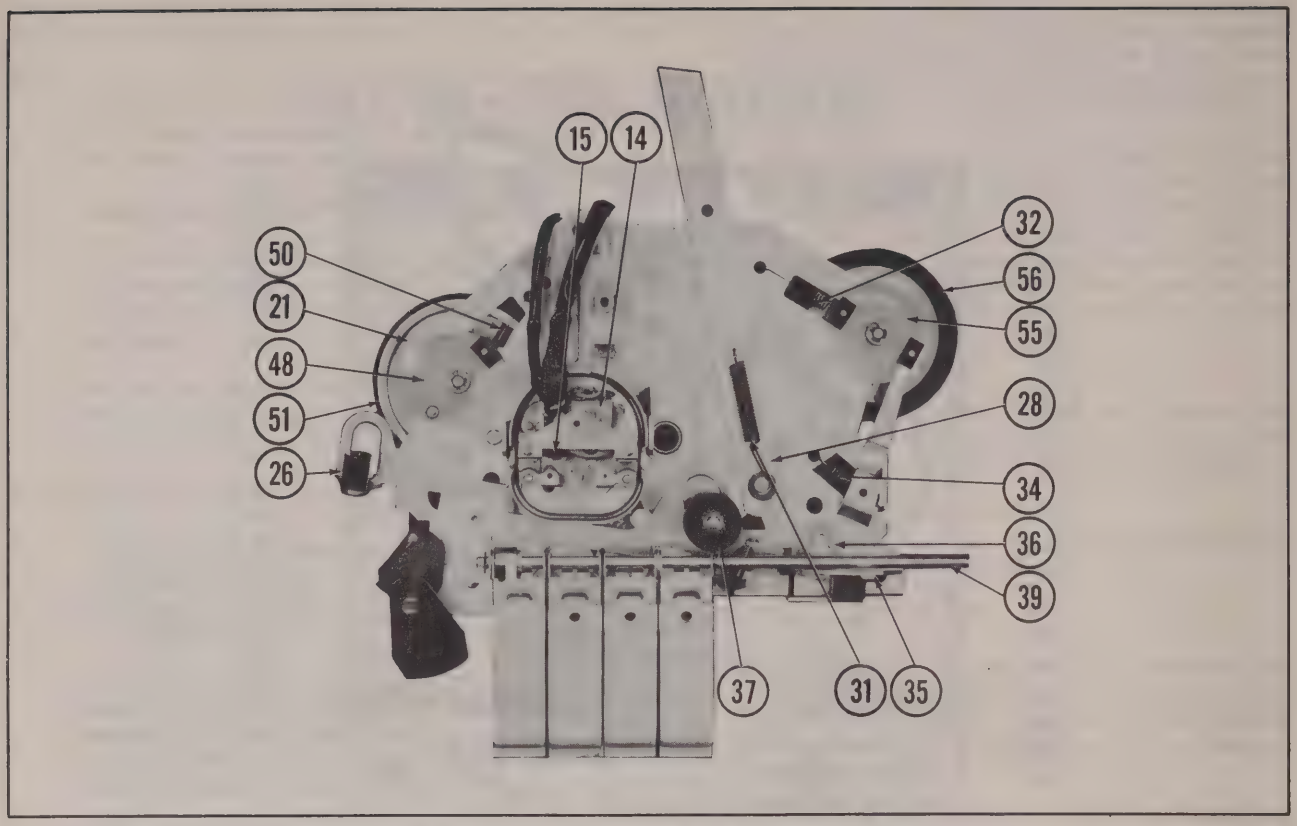


FIG. 2 TOP MECHANISM PLATE ASSEMBLY

2. Remove two Phillips screws, one above the Input jack and the other above the Normal lamp.

3. Pull to remove On-Off-Volume and Tone control knobs.

4. Remove screw from Rapid Forward knob and remove knob.

5. Remove screw from Speed Control knob. Remove knob and washer.

6. Release Record Key Lock. Depress Record Key and move Record key lock to the left. Place screwdriver between Record lock and plastic top plate. Pry lock to the left and lift plate. To remove plate completely, unplug automatic stop switch.

7. To reassemble, reverse the foregoing procedure.

PRELIMINARY TESTS—REPAIR PROCEDURE

Test Procedure: Failure To Pass Any Of These Test Indicates A Fault That Should Be Remedied

1. Remove front and rear plastic head covers by pulling them. Clean the head, tape guides, and capstan with alcohol.

2. Depress Stop key; place Rapid Forward knob in the middle or neutral position; and turn the power on.

3. Thread tape on recorder. (Brakes should be engaged.) Pull required on reel should not distort the tape and should offer enough drag to prevent the tape from spilling. Drop tape into the tape slot. Attach free end to take-up reel (right). Reel should rotate counterclockwise freely and should drag when rotated clockwise.

4. Depress Play key. Speaker key should also go down, and both should latch. Stop key and reel-spindle brakes should release. Solenoid should energize. Felt pressure pads should press against tape and shiny pole face area under tape. Pressure roller (37) should contact capstan, and tape should move past play-record and erase heads at playing speed. Take-up reel should wind tape as it passes the capstan. The counter should tally each revolution of the supply reel.

5. Move Rapid Forward knob to the right. This should release the Play and Speaker keys, and latch down the Stop key. The pressure roller and pressure pads should also be released, and the tape should move forward at a much faster speed.

6. Return Rapid Forward knob to the middle or neutral position. The solenoid and pressure pads should remain disengaged and the Stop key should remain down. The tape should not spill. If it does, see "Stop Key Adjustment".

7. Move Record Key Lock to right. Depress the

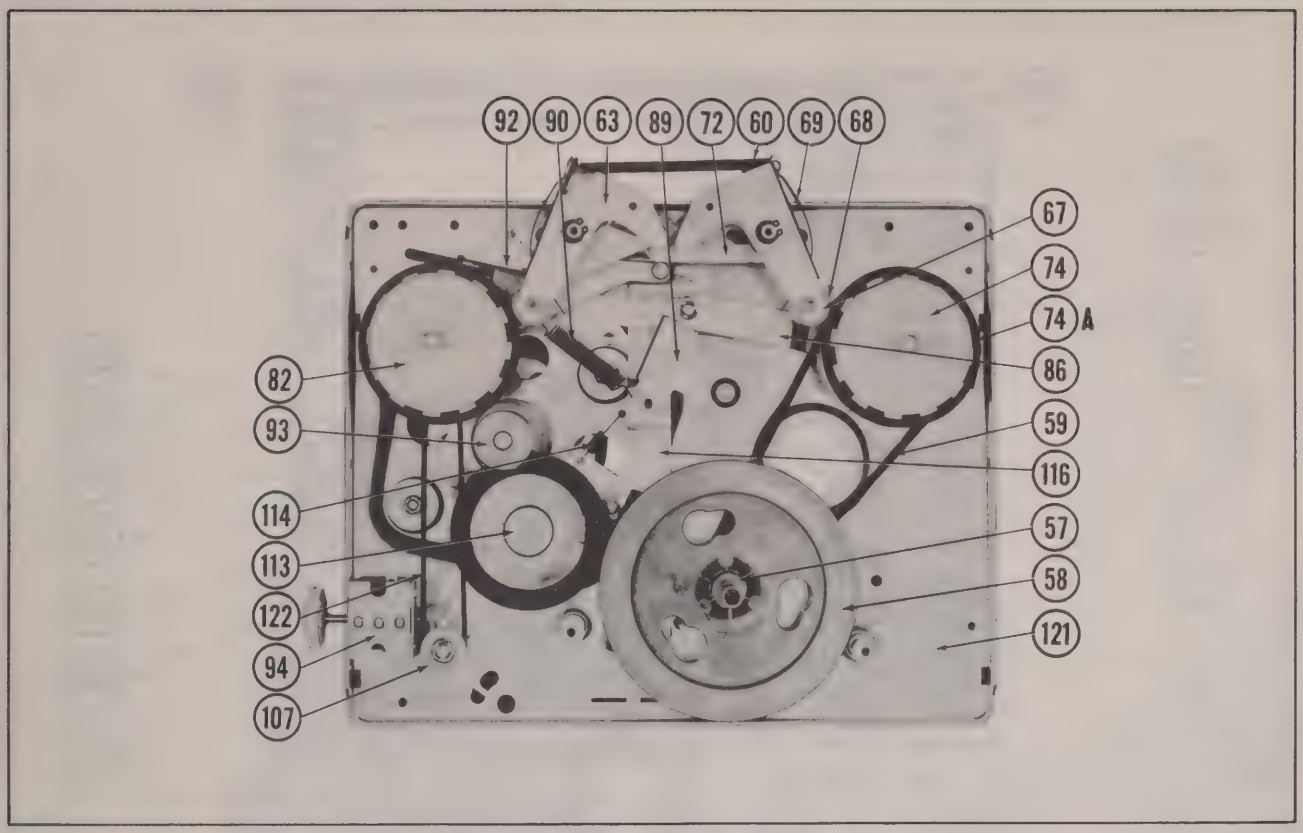


FIG. 3 LOWER MECHANISM PLATE SUB-ASSEMBLY

Record key. Make a microphone recording. Adjust the Volume control while speaking until the Normal indicator flashes, but the Distorted indicator does not.

8. Depress the Speaker key. The speaker should be alive. Depress the Record key again. The Speaker key should release.

9. Move the Rapid Forward knob to the left. The Record key should release and the Record Lock should reset.

10. Playback the recording. Check the volume and tone, and the over-all quality. Amplification at full volume should be sufficient to deliver approximately $5\frac{1}{2}$ watts output.

11. Rewind the tape and rerecord over a previous recording. All traces of the previous recording should have been erased on the rerecorded tape. Check for (wow and flutter).

MECHANICAL ADJUSTMENTS

Stop Key Adjustment

If the solenoid does not release pressure roller (37) in switching from Play or Record to Fast Forward or Rewind, or if the tape spills when the knob is returned to the neutral position from Fast Forward or Rewind by the re-engaging of the solenoid, check the Stop key adjustment as follows:

1. Turn Stop key adjusting screw (44) a few times, and then depress the Play key. Move the Rapid Forward Knob to either Fast Forward or Rewind. Turn Stop key adjustment screw (44) clockwise until the electrical function switch (sawtooth latch bar) just latches to the right and turn the screw an additional one-fourth turn clockwise. If the screw is turned too far clockwise, the Rapid Forward knob will bind.

2. Check the Stop key micro switch (located under the Stop key and encased in fiber).

NOTE: The Stop Key may have to be adjusted when the amplifier assembly is replaced.

Replacing Pressure Pads

Felt pressure pads may be glued on with household cement without removing the pressure pad arms. The pads should cover the shiny pole faces of the heads. The side of the pad touching the head should be free of cement.

Replacing Heads

1. After removing head hold-down spring (13), lift head aligning plate (17) from the head shield cap. Unplug the head cable plug.

2. To remove the sound head, remove the screw in the bottom of head aligning plate (17). To remove the erase head, unscrew erase head mounting screws (16) from the brass alignment plate.

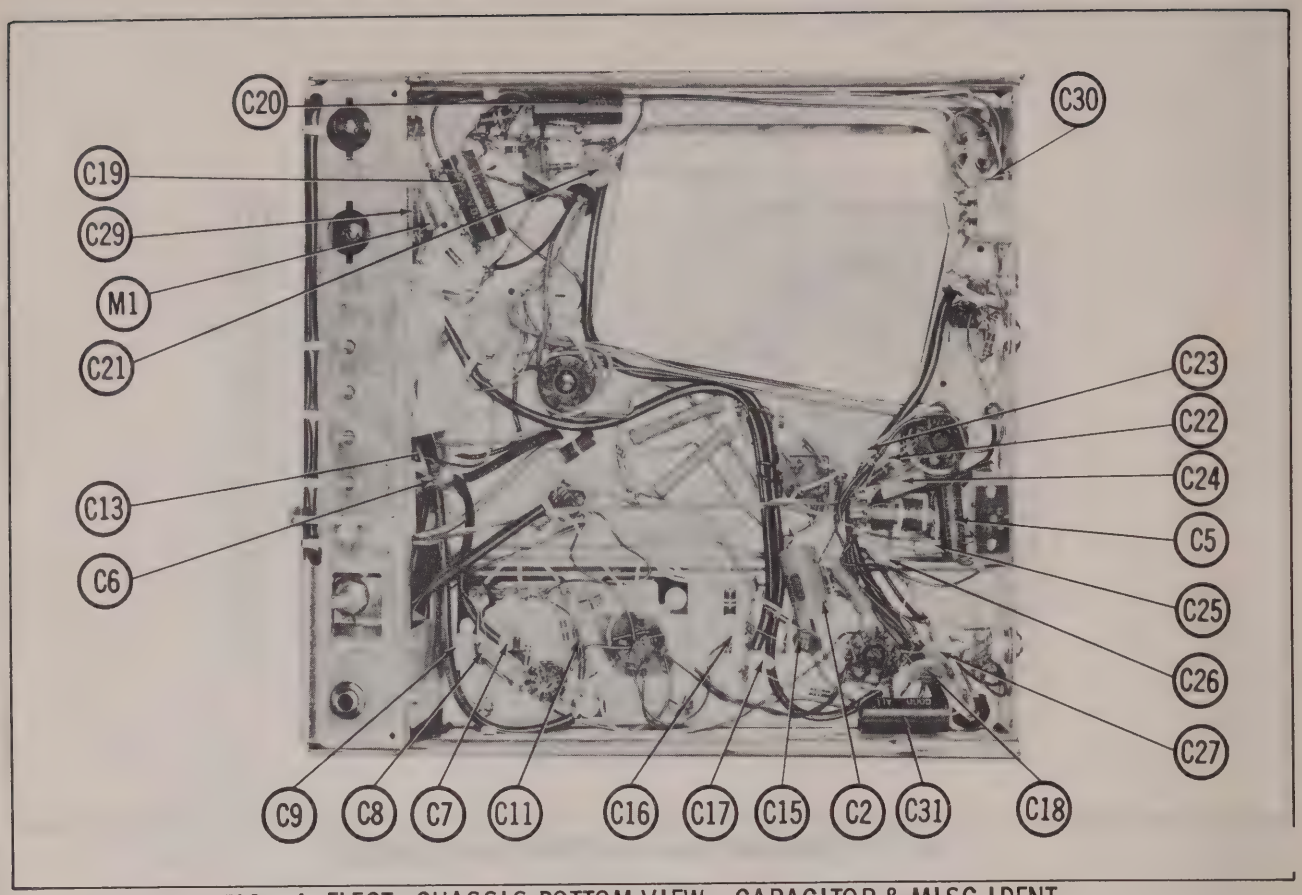


FIG. 4 ELECT. CHASSIS BOTTOM VIEW - CAPACITOR & MISC IDENT.

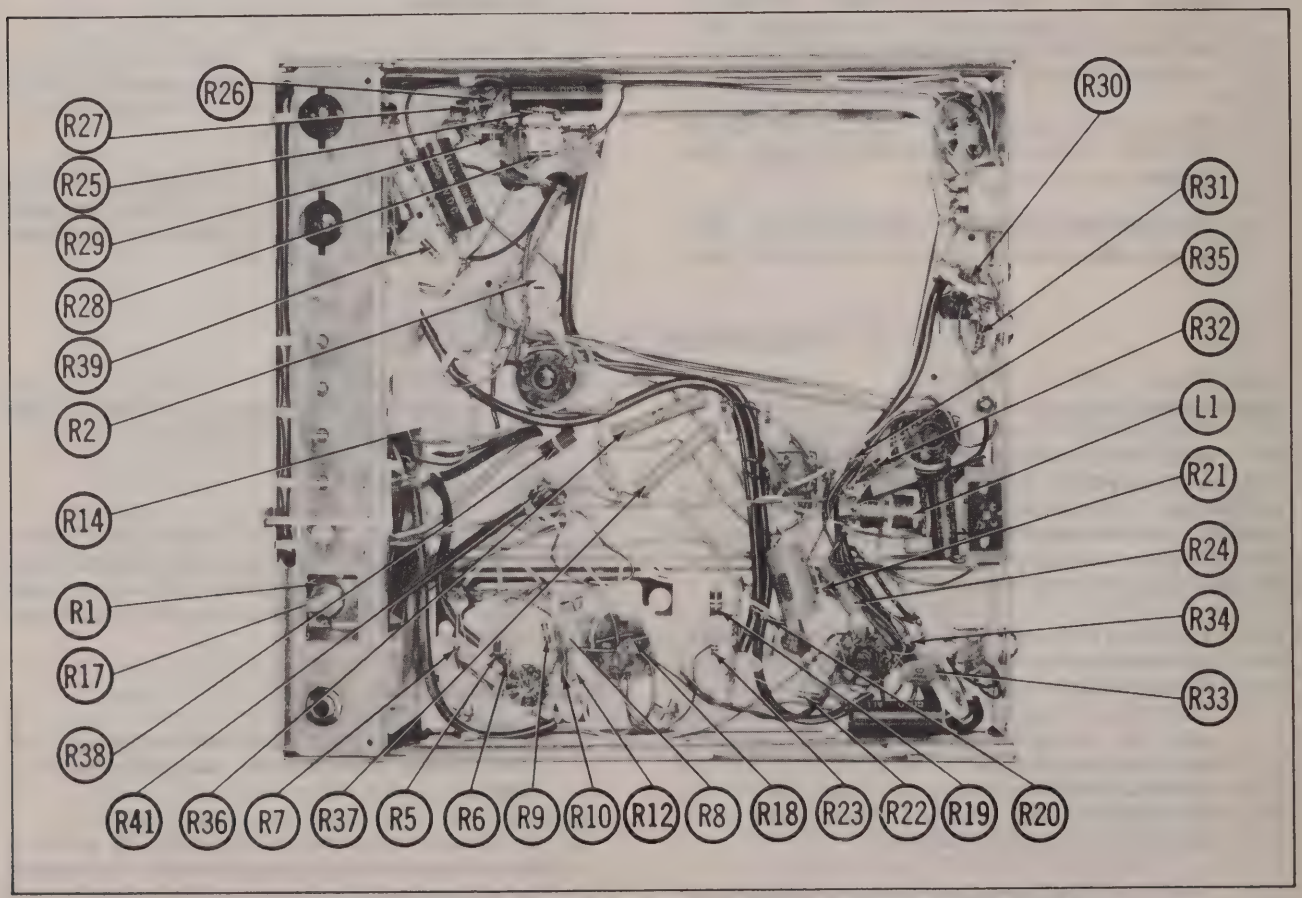
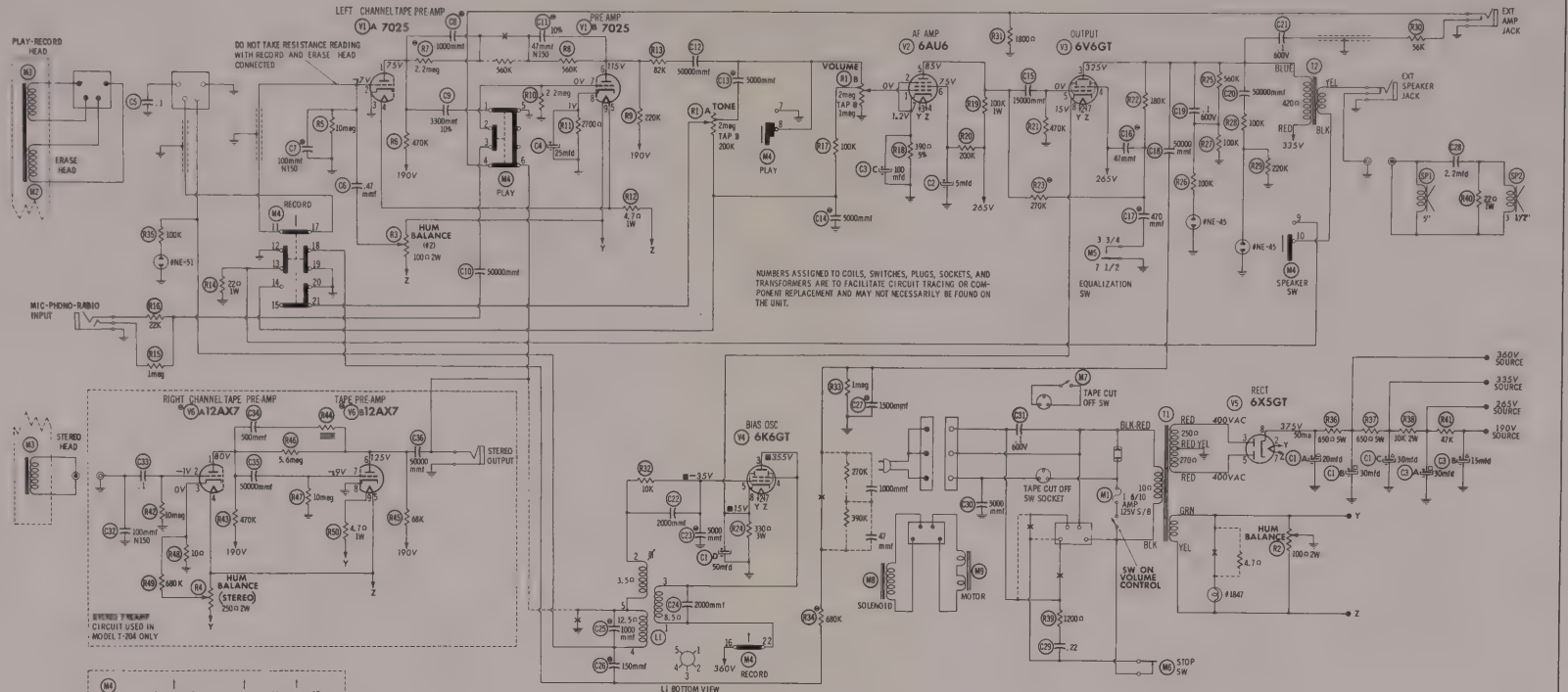


FIG. 5 ELECT. CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	¶530K	10meg	0Ω	28Ω	28Ω	¶280K	2.2meg	2700Ω	25Ω
V2	6AU6	0Ω	390Ω	25Ω	25Ω	¶110K	¶210K	390Ω		
V3	6V6GT	TP	25Ω	¶1700Ω	¶11K	470K	TP	25Ω	330Ω	
V4	6K6GT	NC	25Ω	†•660Ω	†•660Ω	10K	TP	25Ω	330Ω	
V5	6X5GT	NC	25Ω	250Ω	TP	270Ω	TP	25Ω	¶	
V6	12AX7	¶530K	10meg	10Ω	25Ω	25Ω	¶125K	10meg	0Ω	28Ω

¶ ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• MEASURED FROM PIN 8 OF V5. NC NO CONNECTION
MEASURED IN "RECORD" POSITION. TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERMATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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REVERE MODELS T-202, T-204

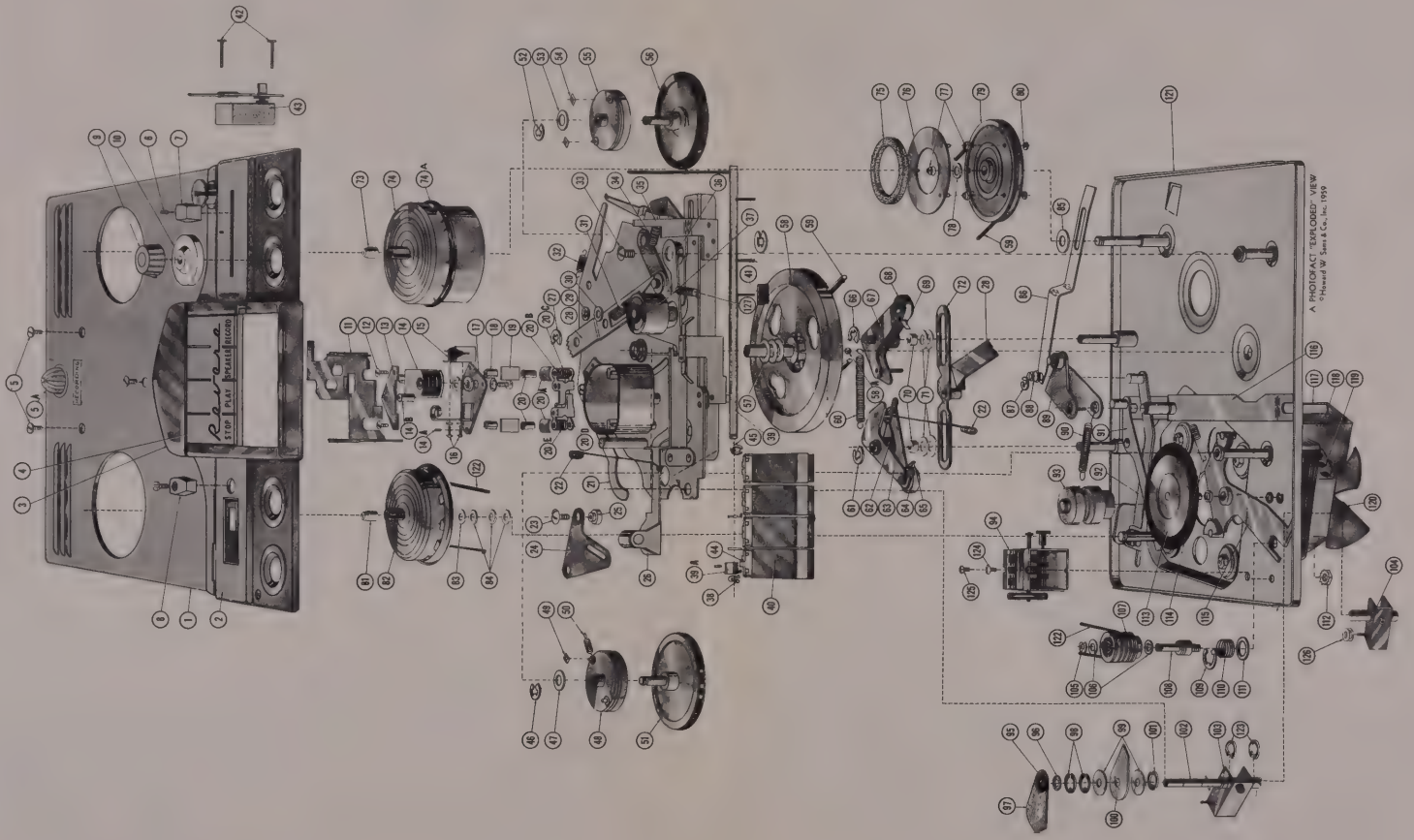


FIG. 6 EXPLODED VIEW OF MECHANISM

3. Place the new sound head on the brass alignment plate, with the washer above the plate and the screw in the bottom. Place the erase head on the alignment plate, and replace the two mounting screws.
4. Replace the alignment plate into the head cup. The pivot studs should engage the holes in the plate. Replace head hold-down spring (13).
5. Align the head azimuth, as described in "Electrical Adjustments".

ELECTRICAL ADJUSTMENTS

Head Azimuth Adjustment

The head must be lined up perfectly with the tape. If it is not, low output and loss of high frequencies will result. There is one adjustment to be made, as follows:

1. Use a 1-mil alignment tape. Thread the tape and set the controls in the play position. Adjust the head for maximum playback sensitivity by turning the adjustment screw (Item 14A on Exploded View). If an alignment tape is unavailable, play a previously recorded tape and adjust the head for maximum treble. After the adjustment is made, cement head adjustment screw (14A) to lock the adjustment.

CLEANING

Most defects, other than wear or breakage, can be traced to dirty surfaces. The heads, capstan, and pressure roller (37) may accumulate tape coating residue, which is worn off the tape as it passes these parts. This accumulation should be removed periodically, since it will cause faint recording and poor playback. Wipe these surfaces carefully with a clean cloth. If the dirt is caked or hard and will not come off with a dry cloth, dampen the cloth slightly with alcohol.

LUBRICATION

All moving parts are permanently lubricated and, under normal use, no further lubrication is necessary. However, in heavy-duty service, the following parts should be lubricated once a year with a drop of No. 10 motor oil:

1. The top and bottom motor bearings.
2. The top and bottom flywheel (58) bearings.
3. Pressure roller (37) bearings.
4. All idler and drive-wheel bearings.
5. The reel spindle bearings.

The basic rule is -- do not overlubricate. Keep oil off all rubber idlers, belts, the rim of the flywheel, and any parts that might transfer oil to them. Always wipe excess lubricant from lubricated parts.

TROUBLE CHART

Symptom	Cause	Remedy
No tape drive in play or record.	1. Pressure roller spring (31) disconnected or broken. As a result, pressure roller (37) is not held in contact with the capstan.	1. Connect or replace pressure roller spring (31).
	2. Motor pulley (93) loose on shaft.	2. Position and tighten motor pulley (93) with set screws.
	3. Idler tension spring (50) or (114) disconnected or broken. As a result, pressure roller (37) is not held in contact with motor pulley (93) and flywheel (58).	3. Connect or replace spring (50) or (114).
	4. Take-up belt (59) stretched or not properly connected.	4. Replace or connect take-up belt (59).
	5. Oil on motor pulley (93), idler wheels (51) and (113), flywheel (58), and take-up belt (59).	5. Clean these parts with alcohol.

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
No fast forward.	1. Check high speed slide cam (35) to see if it moves approximately 7/8 inch to the right. This should allow idler wheel (56) to be pulled by spring (32) into contact with spindle cup (74) and flywheel (58). A weak spring (32), binding idler slide (55), or bent arm may prevent this.	1. Replace or repair damaged part.
	2. With Speed Control knob in $7\frac{1}{2}$-ips position, idler slide (48) must be free to slide $7\frac{1}{2}$-ips speed idler wheel (51) into contact with motor pulley (93). Check tension on idler drive spring (50).	2. Replace or repair idler drive spring (50).
	3. Idler wheel (113) not contacting motor pulley (93) when Speed Control knob is in 3 3/4-ips position.	3. Check tension on idler tension spring (114). Repair or replace spring (114) if necessary.
	4. Oil on drive surfaces.	4. Clean all drive surfaces with alcohol.
	5. Pressure pads engaged.	5. Disengage pressure pads.
No rewind; OK in play and Fast Forward.	1. Spindle cup tire (82A) on supply spindle not contacting motor pulley (93).	1. Replace spindle cup tire (82A).
	2. Rewind spindle arm (91) binding.	2. Free rewind spindle arm (91).
	3. Rewind arm spring (90) loose or broken.	3. Replace rewind arm spring (90).
Tape overruns or spills when functions are changed.	1. Brake arm spring (60) disconnected or broken.	1. Connect or replace brake arm spring (60).
	2. Brake roller leaf spring (65) or (69) broken.	2. Replace brake roller leaf spring (65) or (69).
	3. Take-up clutch felt (75) worn.	3. Replace take-up clutch felt (75).
	4. Grease or oil on drive surfaces.	4. Clean drive surfaces with alcohol.
Wow and flutter	1. Binding in flywheel (58) bearings.	1. Clean and lubricate flywheel (58) bearings.
	2. Binding in pressure roller (37) bearings.	2. Clean and lubricate pressure roller (37) bearings.
	3. Binding in left-and right-reel spindles. The brakes should be disengaged when spindles are turned.	3. Clean and lubricate spindle bearings.
	4. Binding in drive wheel bearings.	4. Clean and lubricate drive wheel bearings.

TROUBLE CHART (CON'T.)

Symptom	Cause	Remedy
	5. Binding in motor bearings.	5. Clean and lubricate motor bearings.
	6. Supply reel scraping top plate.	6. Replace supply reel.
Insufficient take-up.	1. Take-up clutch felt (75) worn.	1. Replace take-up clutch felt (75).
Tape squeaks.	1. Pressure pads too tight.	1. Decrease pressure-pad spring tension.
Weak playback.	1. Dirty head.	1. Clean head with alcohol.
	2. Pressure pads not making good contact with head.	2. Tighten tension of pressure-pad springs.
	3. Head azimuth misadjusted.	3. See "Adjustment".
	4. Head worn or defective.	4. Replace head.
Recorder dead.	1. Defective fuse.	1. Replace fuse.
	2. Defective transformer.	2. Replace transformer.
	3. Defective Power cord or On-Off switch.	3. Replace power cord or On-Off switch.
No erase; records over previous recording.	1. Dirt on erase head or pressure pads.	1. Clean erase head with alcohol, or replace pressure pads.
	2. Defective bias oscillator coil Ll or oscillator tube.	2. Replace oscillator coil Ll or oscillator tube.
	3. Defective erase head.	3. Replace erase head.
Solenoid does not actuate pressure roller (37) in play or record.	1. Solenoid mechanical linkage binding.	1. Free solenoid mechanical linkage.
	2. Defective solenoid.	2. Replace solenoid.
	3. Defective micro switch.	3. Replace micro switch.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	C1-14756	Top Stamped Cover Sub Ass'y
2	R15-14704	Top Plastic Plate
3	A15-14705	Head Cover
4	B15-14710	Head Cleaning Cover
5	A14-14370	Top Plate Screw (3)
5A	A1-187-9	Pilot Light Jewel
6	A14-14735	#4-40 Fillister Head Screw
7	B15-14708	High Speed Knob
8	B2-14655	Two Speed Knob
9	B15-14707	Volume Control Knob
10	TR-7004	Tone Control Knob
11	C3-14744	Tape Guard Plate
12	A14-1057B	#3-48 Straight Side Binding Head Screw (2)

Ref. No.	Part No.	Description
13	A3-14320	Head Hold Down Spring
14		Stereo Head(For Model T-204)
		Play-Record-Erase Head (For Model T-202)
14A		Head Adjustment Screw
14B		TR-7248 Head Aligning Insulating Stud
15		Erase Head(For Model T-204)
16		Erse Head Mounting Screw(2)
17	TR-7136	Head Aligning Plate
18	TR-7246B	Tape Guide Spacer (2)
19	TR-7147A	Tape Guide, Top (2)
20	TR-7245B	Tape Guide Post (2)
20A	TR-7146A	Tape Guide, Bottom (2)

Ref. No.	Part No.	Description
20B	TR-7916	Erase Pressure Pad Ass'y
20C	TR-7610	Record Pad Spring
20D	TR-7915	Record Pressure Pad Ass' y.
20E	TR-7615	Erase Pad Spring
21	C1-14757	Top Mechanism Plate Ass'y.
22	A13-14090	Instant Stop Spring
23	A14-14556	#8-32 Truss Head Screw
24	A3-12375	Fast Speed Lever
25	A4-11229	Link Spacer
26	A1-14740	Instant Stop Arm & Button Sub Assembly
27	A9-11888	"E" Ring
28	TR-7117C	Spring Arm
29	TR-7521	"E" Ring
30	TR-7517	Pressure Roller Washer (2)
31	TR-7601	Pressure Roller Spring
32	TR-7616	Rapid Forward Idler Spring
33	A14-14556	#8-32 Truss Head Screw
34	A3-11203	Pressure Roller Arm Spring
35	A1-14747	High Speed Slide Cam Ass'y.
36	TR-7267	Instant Stop Arm Spacer
37	A30-14068	Pressure Roller Ass'y.
38	TR-7526	Grip Ring 3/16" Shaft
39	A1-14753	Standard Key and Arm Ass'y
39A	A1-14642	Key Collar Assembly
40	B15-14706	Key (4)
41	A9-14694	Tinnerman Push On #C-939-012-27
42	A14-14722	Screw Micro Switch (2)
43	A-174-27	Micro Switch
44	TR-7420	Stop Key Adjusting Screw
45	A9-11888A	"E" Ring 3/16" Shaft
46	A9-11888A	"E" Ring 3/16" Shaft
47	A8-14441	Nylon Washer (2)
48	A15-14001	Idler Slide Top
49	A9-10960	Tinnerman Flat
50	TR-7605	Idler Drive Spring
51	A1-14503	$7\frac{1}{2}$ ips Idler and Rapid Forward Ass'y.
52	A9-11888A	"E" Ring 3/16" Shaft
53	TR-7517	Washer
54	A9-10960	Tinnerman Flat (2)
55	A1-14770	Idler Slide Group Ass'y.
56	A1-14771	Idler Assembly
57	A8-10472	Flywheel Thrust Washer
58	A1-14610	Flywheel and Hub Assembly
59	TR-7809	Take Up Belt
60	A13-14111	Brake Arm Spring
61	A9-12315	1/4" Grip Ring
62	A13-14076	Brake Hold Lever Torsion Spring
63	A1-14095	Left Brake Arm Assembly
64	A15-14064	Brake Roller
65	A13-14077	Brake Roller Leaf Spring
66	A9-12315	1/4" Grip Ring
67	A1-14096	Right Brake Arm Assembly
68	A15-14064	Brake Roller
69	A13-14077	Brake Roller Leaf Spring
70	A4-14074	Brake Arm Spacer
71	TR-7513	Brake Arm Pivot Washer(4)
72	B3-14133	Rear Slide Cam
73	A15-14087	Spindle Cap

Ref. No.	Part No.	Description
74	14227	Spindle Cup And Hi Speed Drum Ass'y.
74A	A30-11094	Rubber "O" Ring
75	TR-7817C	Take Up Clutch Felt
76	TR-7110B	Clutch Plate
77	TR-7617	Clutch Plate Spring, $7\frac{1}{2}$ Speed (3)
78	TR-7504	Spindle Washer
79	A1-14227	Take Pulley Assembly
80	A9-13199	"E" Ring 1/8" Shaft
81	A15-14087	Spindle Cap
82	A1-14520	Rewind Spindle Assembly
82A	A30-11094	Spindle Cup Tire
83	TR-7504	Washer
84	A8-10472	Clutch Washer
85	TR-7502	Take Up Clutch Lever Washer
86	TR-7115	Take Up Clutch Lever
87	A9-1188A	"E" Ring 3/16" Shaft
88	TR-7607	Spring
89	TR-7116	Toggle Arm
89A	TR-7116A	Toggle Arm Bumper
90	TR-7604	Rewind Arm Spring
91	A1-14769	Rewind Spindle Arm Group Ass'y.
92	TR-7911	Selenoid Arm Sub Assembly
93	A4-12393	Motor Pulley
94	A1-14776	Counter Assembly
95		Retainer
96		Washer
97	B12-12314	Speed Indicator
98	A9-12670	"E" Ring 1/4" Shaft
99		Washer
100	A15-14044	2 Speed Switch Cam
101	A9-12670	"E" Ring 1/4 Shaft
102	A4-12313	Speed Control Shaft
103	A1-12355	$7\frac{1}{2}$ ips Actuating Cam
104	A1-12355	3 3/4 ips Actuating Cam
105	A9-1188A	"E" Ring 3/16" Shaft
106	TR-7504	Washer
107	A15-14000	Counter Worm Gear
108	A4-12408	Worm Shaft
109	A9-1329	"E" Ring 3/8" Shaft
110	A13-14481	3 3/4 ips Slide Pressure Spring
111	SP-3541	Flat Washer
112	A9-11184	Shakeproof "Keps" Nut
113		Slow Idler Speed Assembly
114	TR-7616	Idler Tension Spring
115	A3-12379	Slow Idler Slide
116	B3-11196	Slide Cam Connector Arm
117	B1-14724	Solenoid Bracket Sub Ass'y.
118	TR-7803A	Solenoid(105-120 Volts)
119		Motor(110 Volt, 60 Cycle)
120	TR-7157A	Motor Fan
121	C1-14725	Lower Mechanism Plate Sub Assembly
122	A30-11101	Counter Belt
123	A9-10289	Crescent Retaining Ring 5/16"
124	A14-14556	#8-32 Truss Head Screw
125		Screw Phillips Head
126	A15-12406	Detent Roller
127		Standard Key And Arm Ass'y. Spring

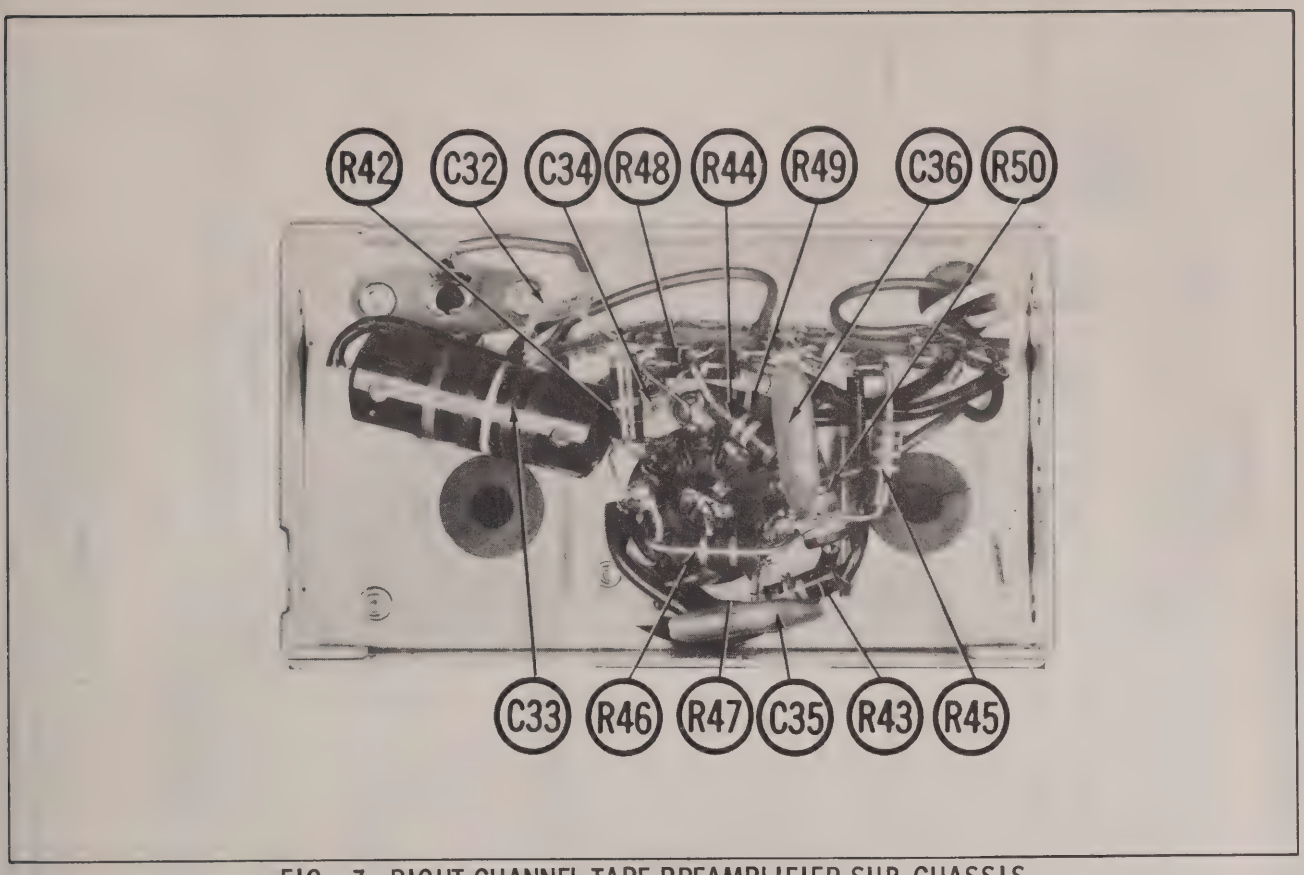


FIG. 7 RIGHT CHANNEL TAPE PREAMPLIFIER SUB-CHASSIS

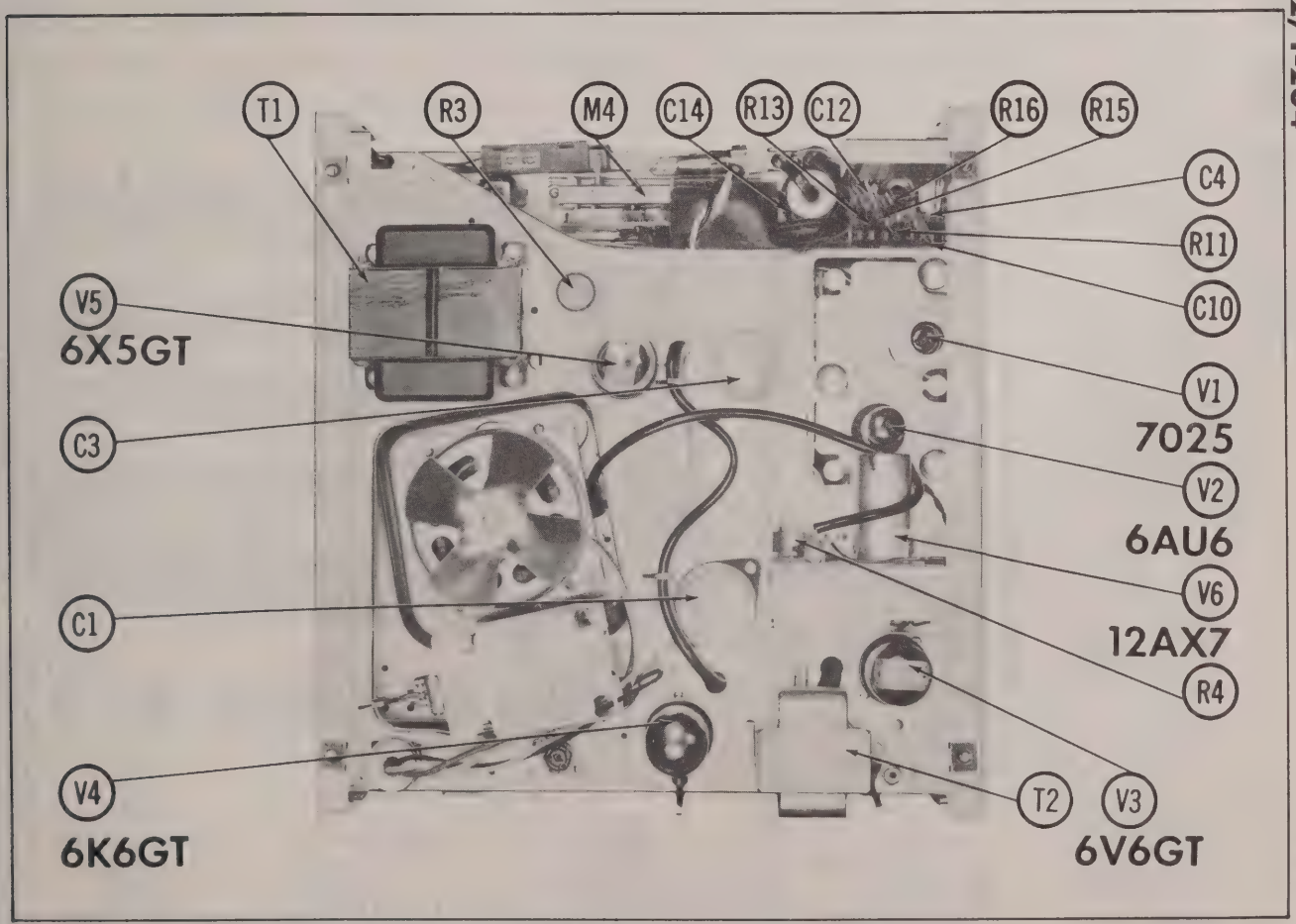


FIG. 8 ELECTRICAL CHASSIS - TOP VIEW

ELECT. PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Left Channel Tape Preamp. - AF Amplifier	7025
V2	Left Channel AF Amp.	6AU6
V3	Left Channel Output	6V6GT
V4	Bias Oscillator	6K6GT
V5	Rectifier	6X5GT
V6	Right Channel Tape Preamplifier	12AX7 (7025)*

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA REVERE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	450	A119-13					TVLS-4709.4*	
B	■30	400							
C	▲30	350							
D	50	25							
C2	5	300	A118-2	PRS1610	BR835	TC60	TD-8-350	TVA-1603	
C3A	■30	350	A119-3		B0646			TVLS-3616*	
B	▲15	300			BR3035				
C	100	6							
C4	25	25	A116-2	PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA REVERE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	.1	200		B115-1	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C6	.47			B110-1	NPO-SI .5	TCZ-R5				
C7	100		N150	B112-1					10TCP-T10	①
C7	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D10	②
C9	3300		10%	B113-9	DI-3300		PM6D33	JL-233	10TS-D33	
C10	50000				BPD-05	DD-503	PM6S5	GP150	5HK-S50	
C11	47		N150 10%	B111-2					10TCP-Q47	③
C12	50000			B114-11	BPD-05	DD-503	PM6S5	GP150	5HK-S50	
C13	5000			B113-8	BPD-005	DD-502	BYA10D5	B-250	5HK-D50	④
C14	5000			B113-8	BPD-005	DD-502	BYA10D5	B-250	5HK-D50	④
C15	15000			B114-2	BPD-015	DD-153	BYA10S15	GP115	5HK-S15	
C16	47				DI-47	DD-470	L0 Q47	GP447	5GA-Q47	⑤
C17	470			B112-5	DI-470	DD-471	BYA10T47	B-347	5GA-T47	①
C18	50000			B114-11	BPD-05	DD-503	PM6S5	GP150	5HK-S50	
C19	.1	600		B115-2	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C20	50000			B114-11	BPD-05	DD-503	PM6S5	GP150	5HK-S50	
C21	.1	600		B115-2	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C22	2000			B113-3	BPD-002	DD-202	BYA10D2	B-220	5HK-D20	
C23	5000			B113-8	BPD-005	DD-502	BYA10D5	B-250	5HK-D50	⑥
C24	2000			B113-3	1467-002M	DD-202	5W5D2	MC457	5HK-D20	
C25	1000			B113-12	1468-001M	DD-102	5W5D1	MC255	5HK-D10	⑦
C26	150			B112-2	DI-150	DD-151	L10T15	B-315	5GA-T15	①
C27	1500			B113-10	BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	⑧
C28	2.2				P292ZN-2.2	UK-225	MP2W2		118P20502S2	
C29	.22	400		B115-3	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C30	5000			B113-8	BPD-005	DD-502	BYA10D5	B-250	5HK-D50	
C31	.1	600		B115-2	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C32	100		N150	B112-1					10TCP-T10	
C33	.1	200		B115-2	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C34	500				DI-500	DD-501	L10T5	B-350	5GA-T50	
C35	50000			B114-11	BPD-005	DD-503	PM6S5	GP150	5HK-S50	
C36	50000			B114-11	BPD-05	DD-503	PM6S5	GP150	5HK-S50	

① Model T-202 uses 680mmf in this application.
② Model T-202 uses 1400mmf in this application.
③ Model T-202 uses 220mmf in this application.
④ Model T-202 uses 3000mmf in this application.
⑤ Model T-202 uses 300mmf in this application.
⑥ Not used in Model T-202
⑦ Model T-202 uses 2000mmf in this application.
⑧ Model T-202 uses 470mmf in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA REVERE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	B140-6	F1-73				Tone, Tap ② 200K
B	2meg	½		R2-75				Volume, Tap ② 1meg
C	Switch			KR-1				Power Off-On
R2	100Ω	2(WW)	A140-1				FL100P	Hum Balance
R3A	100Ω	2(WW)	A140-7	WN-101	A43-100	WPK100	R100L	#2 Hum Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R4	250Ω	2(WW)	A140-13					Hum Balance, Stereo Preamp.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	10meg	
R6	470K	
R7	2.2meg	Note 1
R8	560K	
R9	220K	
R10	2.2meg	
R11	2700Ω	
R12	4.7Ω 1W	
R13	82K	
R14	22Ω 1W	
R15	1meg	
R16	22K	
R17	100K	
R18	390Ω 5%	
R19	100K 1W	
R20	200K	

ITEM No.	RATING	REMARKS
R21	470K	
R22	180K	
R23	270K	Note 2
R24	330Ω 3W	
R25	560K	
R26	100K	
R27	100K	
R28	100K	
R29	220K	
R30	56K	
R31	1800Ω	
R32	10K	
R33	1meg	
R34	680K	Note 3
R35	100K	
R36	650Ω 5W	#A106-9

ITEM No.	RATING	REMARKS
R37	650Ω 5W	#A106-9
R38	10K 2W	
R39	1200Ω	
R40	22Ω 1W	
R41	47K	
R42	10meg	
R43	470K	
R44	120K	
R45	68K	
R46	5.6meg	
R47	10meg	
R48	10Ω	
R49	680K	
R50	4.7Ω 1W	

Note 1. Not used in Model T-202.
Note 2. Model T-202 uses 180K in this application.
Note 3. Model T-202 uses 150K in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA REVERE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	A132-2						

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA REVERE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② .45A	800VCT ③ .050A	6.3V ② 2.1A	B-130-9						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA REVERE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	3500Ω	3-4Ω	A-131-7	26S50 ①	A-3018 ①	AU-604 ①	A-3849 ①	26S50 ①	S-5Z ①	① Not shielded

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	REVERE PART No.	QUAM PART No.	
SP1	5"	PM	7-9Ω	C160-8	52A21Z8	
SP2	3½"	PM	7-9Ω	A160-9	3A15T	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			REVERE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1 6/10A 125V S/B (Pigtail)	A176-2		31501. 6 (3AG 1 6/10A 125V S/B (Pigtail)		MDV1 6/10	

MISCELLANEOUS

ITEM No.	PART NAME	REVERE PART No.	NOTES
M2	Erase Head		
M3	Record Head		Stereo, Model T-204
	Record Head		Monaural, Model T-202
M4	Switch	A-141-3	Stop-Play-Speaker-Record (Pushbutton Type)
M5	Switch	A-141-12	Equalization
M6	Switch	A-141-2	
M7	Switch	A-141-27	Tape Cut-Off
M8	Solenoid	TR-7803A	(105-120V)
M8	Motor		
	Microphone	B162-5	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	B15-14707	Volume
Knob	TR-7004	Tone
Knob	B15-14708	High Speed
Knob	C2-14655	Two Speed
Handle	C2-14656	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder with CIRCUITRACE*

WEBCOR MODELS 1955-1, 1962-1, 1967-1 (Ch. 14X282-1, 14X283-1)

WEBCOR MODELS 1955-1, 1962-1, 1967-1 (Ch. 14X282-1, 14X283-1)

MODEL PC1955-1

WEBCOR MODELS 1955-1, 1962-1, 1967-1 (Ch. 14X282-1, 14X283-1)

TRADE NAME	Webcor Models BC-1955-1, MC-1955-1, PC-1955-1, WC-1955-1, EP-1962-1, TP-1962-1, BC-1967-1, MC-1967-1 (Ch. 14X282-1, 14X283-1)
MANUFACTURER	Webcor, Inc., 5610 W. Bloomingdale Ave., Chicago 39, Illinois
TYPE SET	AC Operated 5 Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 40 Watts, .44 Amp. @117 Volts AC (Less Motor)

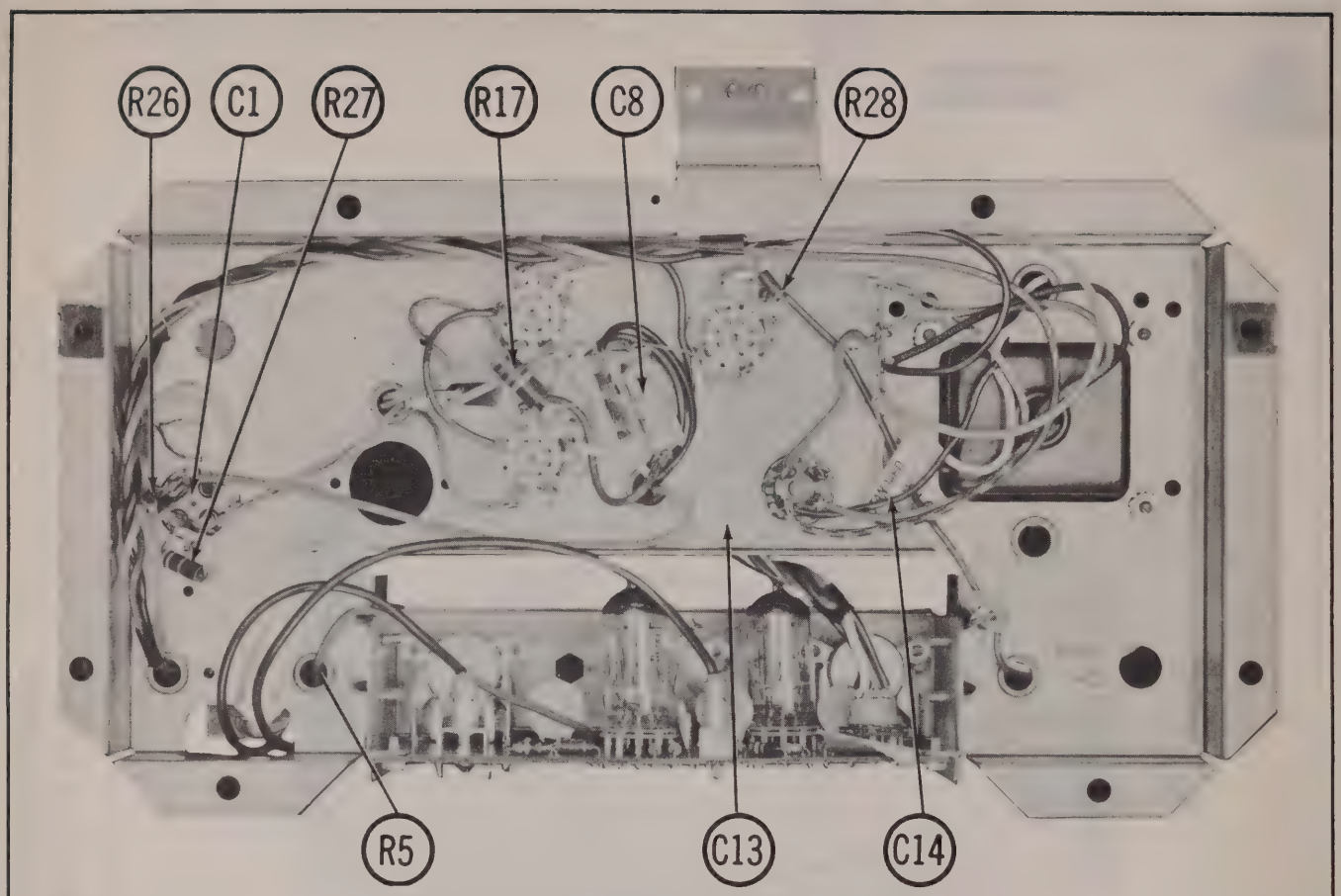
FOR SERVICE INFORMATION ON RECORD CHANGER —SEE WEBCOR 168 — PHOTOFACT SET 447 FOLDER 13.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

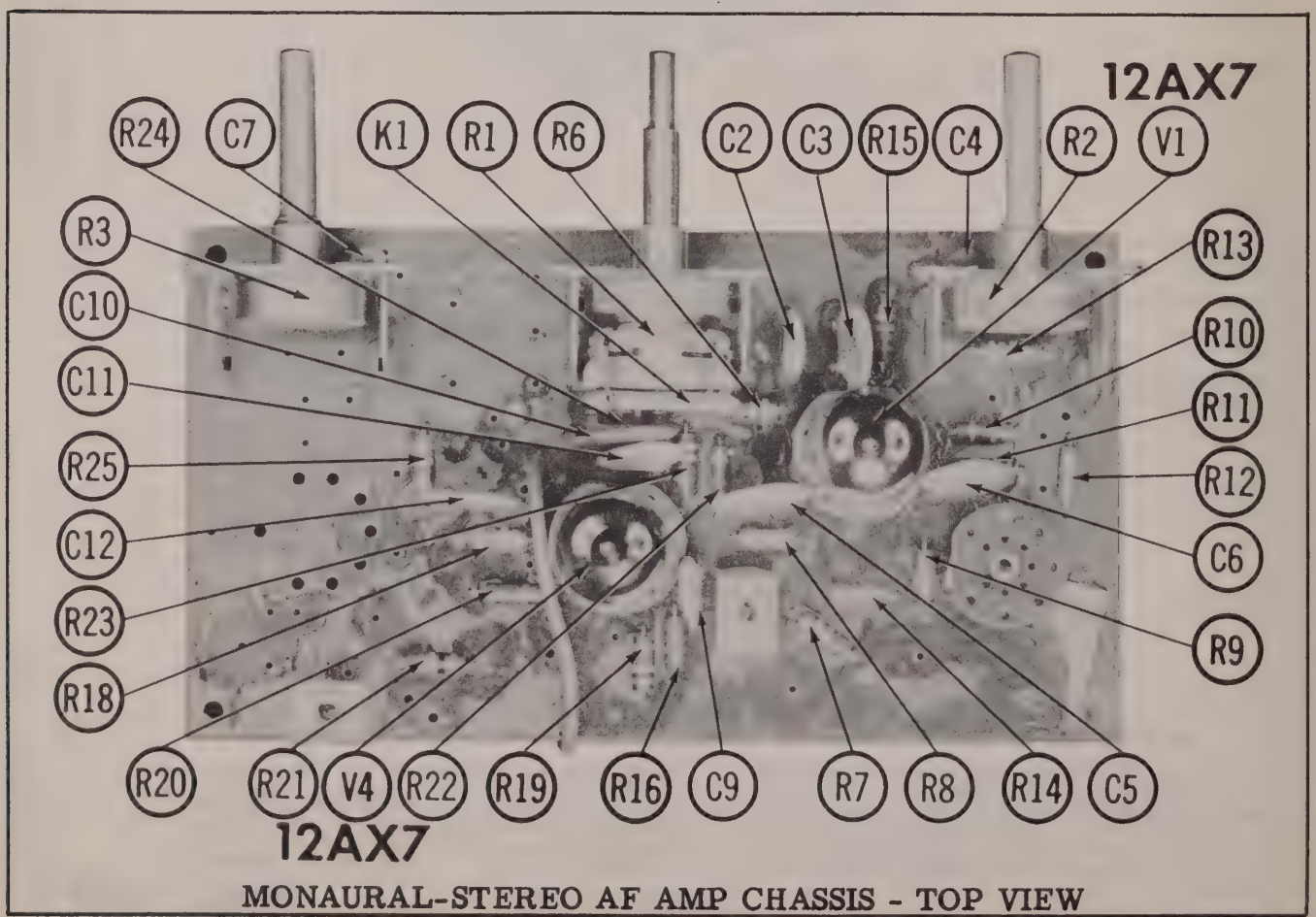
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JT343

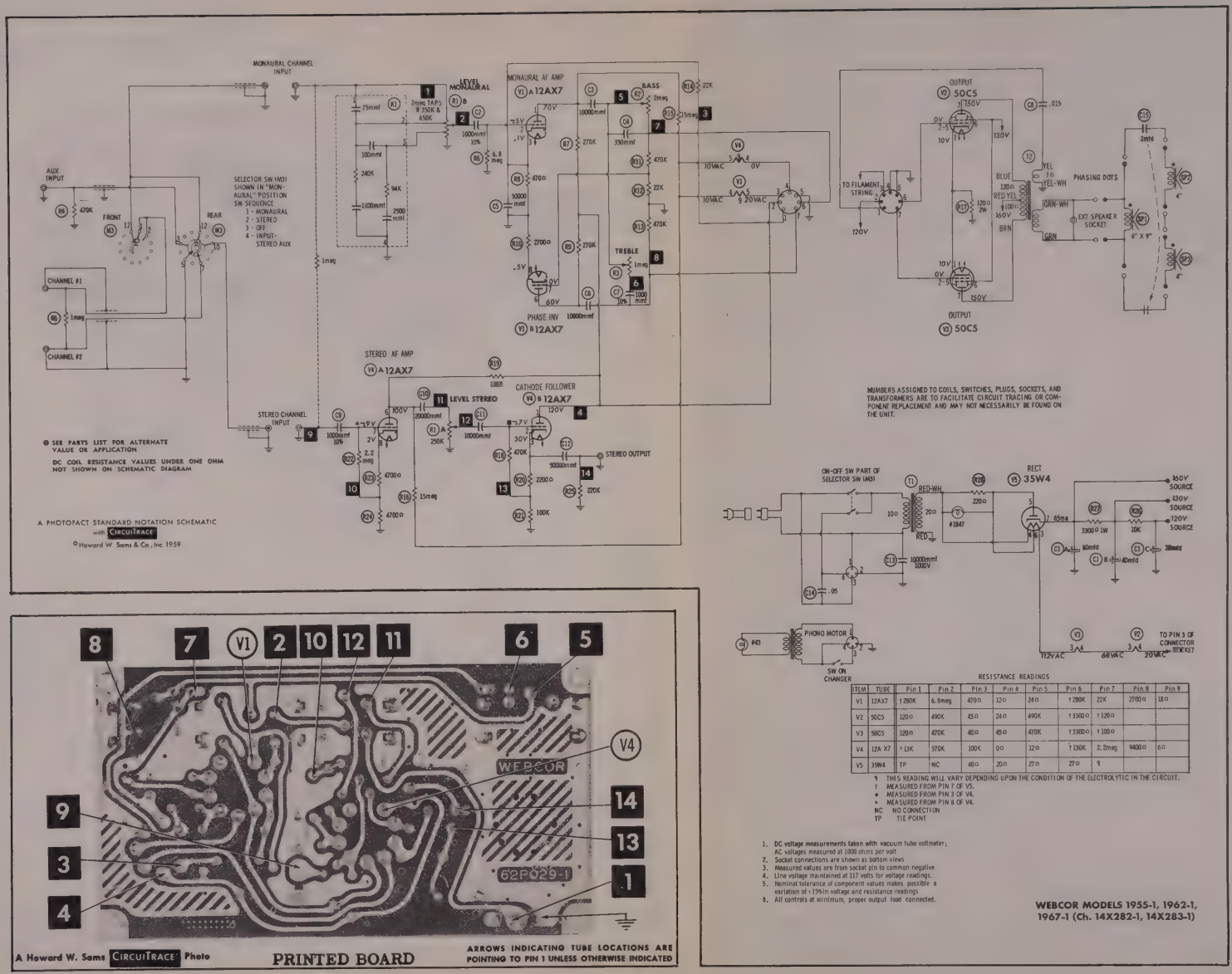
SET 463 FOLDER 15



POWER CHASSIS - BOTTOM VIEW



MONAURAL-STEREO AF AMP CHASSIS - TOP VIEW



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PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†280K	6.8meg	470Ω	12Ω	24Ω	†280K	22K	2700Ω	18Ω
V2	50C5	120Ω	490K	45Ω	24Ω	490K	†3300Ω	†120Ω		
V3	50C5	120Ω	470K	40Ω	45Ω	470K	†3300Ω	†100Ω		
V4	12A X7	†13K	570K	100K	0Ω	12Ω	†130K	2.2meg	9400Ω	6Ω
V5	35W4	TP	NC	40Ω	20Ω	27Ω	27Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
● MEASURED FROM PIN 3 OF V4.
▪ MEASURED FROM PIN 8 OF V4.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings
6. All controls at minimum, proper output load connected.

WEBCOR MODELS 1955-1, 1962-1, 1967-1 (Ch. 14X282-1, 14X283-1)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Monaural AF Amp. - Phase Inv.	12AX7	V3	Monaural Output	50C5
V2	Monaural Output	50C5	V4	Stereo AF Amp. -Cath. Foll.	12AX7
			V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	60	200	30P354	AFH4-02-30	B0230	FP326.4	TMD-26	TVL-4583	
B	40	200			BR6025		TD-60-350		
C	20	200							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	WEBCOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	1000		10%	30P355	DI-1000			JL-210	MS-21	
C3	10000			30P254	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C4	330			30P285	BPD-00033	DD-331	L10T33	B-333	5GA-T33	
C5	50000			30P330	BPD-05	DF-503	CUB6S5		5HK-S5	
C6	10000			30P254	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	1000		10%	30P351	DI-1000			JL-210	MS-21	
C8	.015	400		30P312	P488N-015	DD16-153	CUB6S15	GEM-4115	4TM-S15	
C9	1000		10%	30P355	DI-1000			JL-210	MS-21	
C10	20000			30P344	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C11	10000			30P254	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C12	50000			30P330	BPD-05	DF-503	CUB6S5		5HK-S5	
C13	10000	1000		30P220	DAC-27	DD-103	BYA10S1	B-110	5HK-S1	
C14	.05	400		30P255	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C15	2mfd	25		30P317-1	P282Z-2.0		MP2W2		118P20502S2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	WEBCOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	250K	1/2	31P143-1					Level, (Stereo)
B	2meg *	1/2						Level, (Monaural)
R2	2meg	1/2	31P142					Bass, (Monaural)
R3	1meg	1/2	31P141					Treble, (Monaural)

* Taps ⓐ 350K and 650K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	470K	
R5	1meg	
R6	6.8meg	
R7	270K	
R8	470Ω	
R9	270K	
R10	2700Ω	
R11	470K	
R12	22K	

ITEM No.	RATING	REMARKS
R13	470K	
R14	22K	
R15	15meg	
R16	15meg	
R17	120Ω 2W	
R18	470K	
R19	120K	
R20	2200Ω	
R21	100K	

ITEM No.	RATING	REMARKS
R22	2.2meg	
R23	4700Ω	
R24	4700Ω	
R25	220K	
R26	10K	
R27	3300Ω 1W	
R28	220Ω	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	WEBCOR PART No.	REPLACEMENT DATA
K1	Input Comp.	75mmf, 100mmf, 1100mmf, 2500mmf, 94K, 240K	62P017	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .44A	150V ⓐ .250A (AC)		68P067						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4500Ω CT	7.2Ω SEC. 2 6-8Ω	67P068							

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	WEBCOR PART No.	QUAM PART No.	
SP1	6"x 9"	PM	6-8Ω	76P083	69AZ7.7	
SP2	4"	PM	3-4Ω	76P077-1	3AQ7	
SP3	4"	PM	3-4Ω	76P077-1	3AQ7	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	WEBCOR PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	21P573 †	* 13TB	Not Req.					† Includes needles * Include Mounting mechanism

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	WEBCOR PART No.	JENSEN PART No.	WALCO PART No.	
M2	21S616-SS (78 RPM)	E98 † or E98D ♦	* W-101STS † or * W-102S ♦	† Jewel ♦ Diamond * Includes Cartridge
	21S616-LS † or 21S516-LD ♦ (LP)	E98X † or E98XD ♦		

MISCELLANEOUS

ITEM No.	PART NAME	WEBCOR PART No.	NOTES
M3	Switch Switch Printed Board	32P138 62P029-1	Selector Off-On-Reject (Part Of Changer)

CABINETS & CABINET PARTS

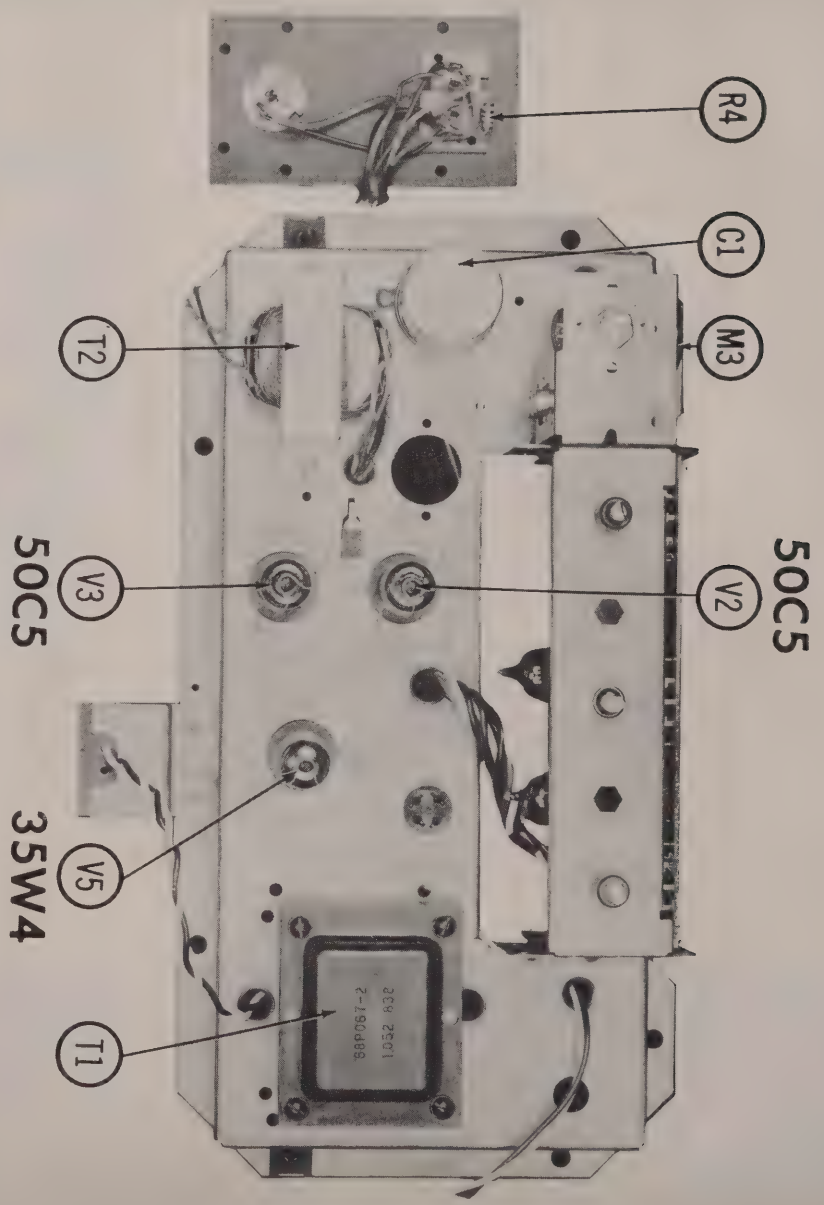
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

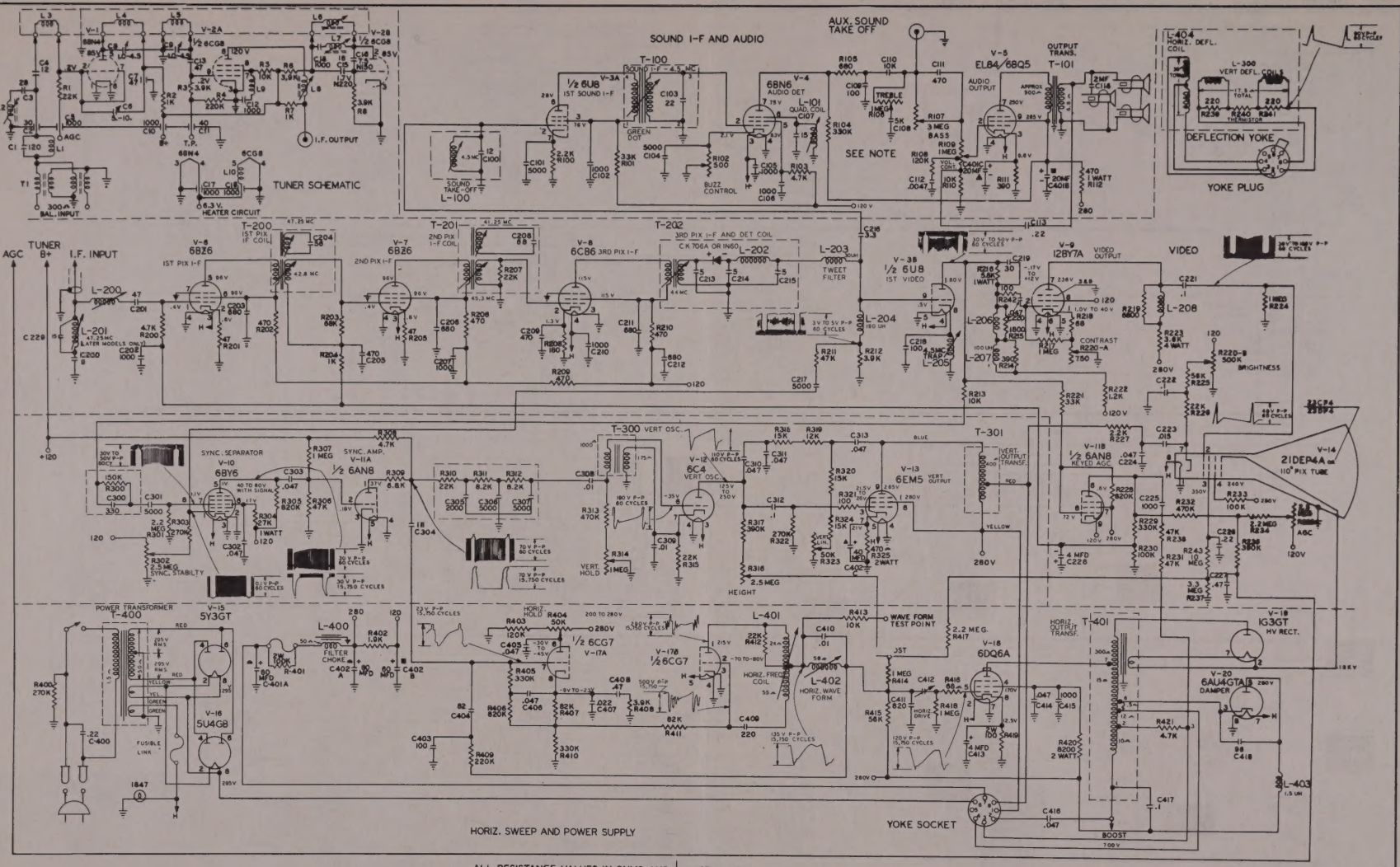
NAME	PART NO.	DESCRIPTION
Knob	39P206-4	Volume, Inner Models 1955 & 1967, TP1962
Knob	39P210-2	Volume, Stereo, Outer Models 1955 & 1967 & TP1962
Knob	39P210-3	Volume, Stereo Model EP1962
Knob	39P206-7	Volume, Monaural Model EP1962
Knob	39X212-2	Tone & Function Switch, Models 1955 & 1967, TP1962
Knob	39X212-3	Tone & Function Switch, Models EP1962
Case	92X086-1	Model MC1955
Case	92X086-2	Model BC1955
Case	92X086-3	Model PC1955
Case	92X086-4	Model WC1955
Case	92X094-1	Model MC1967
Case	92X094-2	Model BC1967
Case	92X095-1	Model TP1962
Case	92X095-2	Model EP1962

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

POWER CHASSIS—TOP VIEW





ALL RESISTANCE VALUES IN OHMS AND $\frac{1}{2}$ WATT UNLESS OTHERWISE SPECIFIED.

ALL CAPACITANCE VALUES LESS THAN 1.0 IN MF. AND ABOVE 1.0 IN MMF. UNLESS OTHERWISE NOTED.

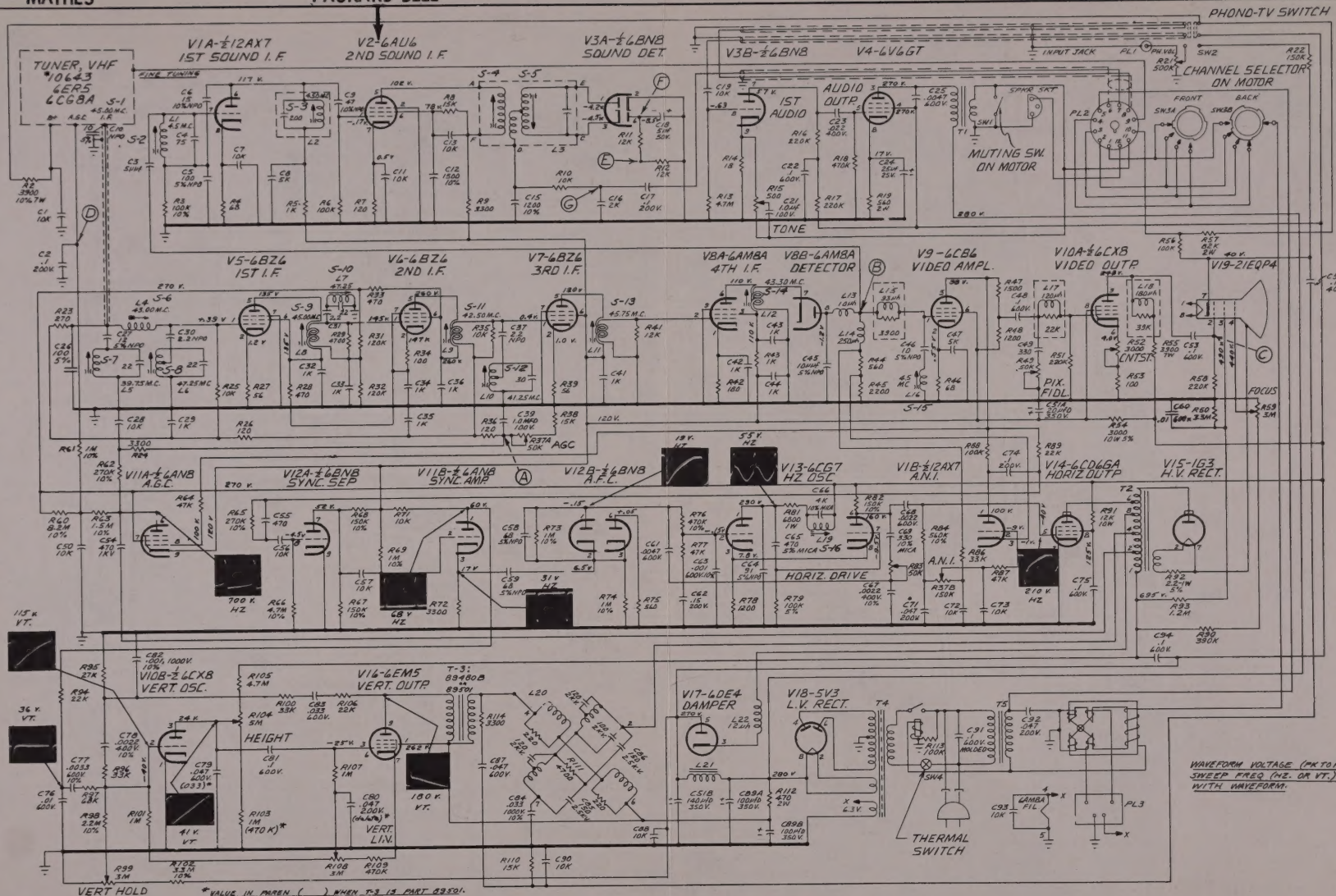
COIL RESISTANCE VALUES LESS THAN 1.0 OHM ARE NOT SHOWN.

NOTE: ON SOME MODELS C109 IS .001 MMF AND C108, C111, R106 AND R107 ARE NOT USED.

MATHES MODELS 7323, 9323

Schematic Diagram Courtesy of Mathes Mfg. Company

PACKARD BELL



PACKARD BELL MODEL 21DC12 (CH. 98D7)

Schematic Diagram Courtesy of Packard Bell Electronics Corp.

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